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RECENT BIOCHEMICAL INVESTIGATIONS ON BLOOD AND URINE

THEIR BEARING ON CLINICAL AND EXPERIMENTAL MEDICINE *

OTTO FOLIN, PH.D., S.D.

Professor of Biologic Chemistry, Medical School of Harvard University

BOSTON

It is generally recognized that progress in the development of any experimental science is more often due to the discovery of new methods than to new and more ingenious applications of old ones.

An unending procession of new remedies and new procedures moves across the field of clinical medicine. The wide attention bestowed on Abderhalden's pregnancy test may be cited as a specific illustration of the eagerness with which the medical profession is waiting for new methods. Brugsch's new nitric acid test for syphilis is another illustration. This test will doubtless prove even more alluring to those who have opportunity to try it; for, whereas the Abderhalden test was complicated and admittedly full of pitfalls, this new test for syphilis seems almost ideal in its simplicity. Its lack of "rhyme or reason" will not deter many from trying it.

In the science of biochemistry, too, we have had a constant succession of new methods, and a very important phase of the biochemical research of today is still the development of analytic technic. In the last few years there have been very great changes in the methods used for the analysis of urine, while the advancement in the field of blood analysis has been ever more remarkable.

The foremost characteristic of the successful modern analytic method is speed. With reference to the value of time, the biochemical investigator of today is no less keen than are the leaders in modern industry. Many of the older methods in use, say fifteen years ago, as, for example, Salkowski's method for uric acid, the Mörner-Sjöquist method for urea, or the Schlösing method for ammonia, were accurate enough, but they were slow, and they did not encourage the application of chemical methods to the study of clinical problems. When a physician had to wait four days before he could learn how much ammonia a given urine contained, he did not bother himself very often about determinations of ammonia. And, as a matter of fact, this good old method for the determination of ammonia was so little used that investigators gradually forgot how the method must be employed in order to yield correct results.

Today any analytic method in urine analysis which cannot be finished within less than two hours stands in need of further revision. Most of the common determinations in urine and blood will become from fifteen to thirty minute methods for single determinations, and also several determinations will be made with little extra expenditure of time.

Almost every material reduction in the time and labor required for a given determination is followed by an increase in the number of investigators who make researches based on that determination. But it is only when we come down to the very shortest of biochemical methods that they begin to appeal to clinicians, and it is, I think, no small triumph for the modern technic that clinicians have begun to compete with laboratory specialists in the fields of research suggested by these new methods.

A considerable and constantly growing number of American physicians now possess laboratories in which chemical determinations are made. It is difficult as yet to appraise the probable value of this kind of work contributed by clinicians. A large proportion are busy practitioners who have considered their own time too valuable to permit them to acquire any personal mastery over the methods. Hence they hire technicians to do the work without themselves being competent to judge of the quality of the work. The net gain to science from such work must be distinctly problematic.

There is a legitimate and important use for technical assistants in the innumerable little laboratories springing up in connection with private and with hospital practice of medicine, but it seems to me extremely important that this use should conform to some reasonably honest standard of responsibility. The physician should know at least as well as his technician each and every kind of determination that the technician makes for him. Every method goes wrong now and then, and the physician who is as helpless as is the technician when something does seem to be wrong has but meager qualification for the work he is trying to do.

The current misuse of technicians does impair somewhat the credibility of laboratory observations recorded by clinicians, but this represents presumably only a passing phase, and it does not obscure the fact that many clinicians are keen and alert for every new chemical method which is sufficiently practical for their needs. It is unfortunate that the laboratory expert and the competent clinician cannot be united in one person. It is unfortunate that methods must be simple and easy, as well as quick, before they can find any very widespread and sound application within the medical profession. The modern methods are wonders in quickness in comparison with the old ones, and

* Third Mellon Lecture under the auspices of the Society for Biological Research, University of Pittsburgh, May 18, 1917.

they are not very complicated; but no man knows them who does not know how to check up his own results by working against theoretical figures.

A second characteristic of modern analytic technic, as distinguished from the old, is the tendency to make the methods microchemical. Formerly a full twenty-four hour quantity of urine was scarcely large enough to permit a complete analysis. Today 10 c.c. of urine is abundant for a determination of all the more common nitrogenous constituents. We still demand twenty-four hour samples of urine, and have gone on the assumption that we must have them to secure a satisfactory picture of the waste products; but we do not need them for the analyses. Indeed, many modern researches are based on analyses of urine representing periods much shorter than twenty-four hours.

The importance of being able to make quantitative studies on the basis of less than twenty-four hour urines is shown in the recent communications by Dr. Denis on creatin. We still do not know for certain some things which we must find out about the origin of this product. We know that the muscles contain creatin, or its precursor, and that in the urine we find normally (except in children) a great deal of creatinin, but only traces of creatin. It now turns out that these traces are not excreted, as is creatinin, at a substantially uniform rate from hour to hour. On the contrary, the creatin excretion is confined to a short period after each meal.

The time honored twenty-four hour system of urine analysis has been and will remain important; indeed, it will remain indispensable in some kinds of metabolism work. The twenty-four hour system is, nevertheless, largely a relic of what might be called the nitrogen equilibrium period in the history of the science of nutrition. But nitrogen equilibrium has largely ceased to be a factor to which we must pay attention in metabolism studies on human beings. For we know perfectly well that it is only by means of carefully selected diets that we can give a person enough food to meet his energy requirements without at the same time giving him enough protein for the maintenance of a normal level of nitrogen equilibrium. We may often enough wish to determine the general level of nitrogen elimination, but it is rare indeed that we need to know or actually do determine any little discrepancy that may occur between the intake and the outgo of nitrogen. Nor can such discrepancies be determined except on the basis of experiments a great deal longer than one twenty-four hour period. Twenty-four hour urines are no longer needed even for very comprehensive analyses, and I am convinced that for many purposes, and particularly for clinical studies, we shall find that urine analysis based on definite three hour, or at most four hour periods of urine collection, will yield considerable new information and will greatly simplify the application of quantitative methods to the study of metabolism problems. The change will increase enormously the possibilities for doing quantitative metabolism work on patients, very few of whom can be relied on to collect twenty-four hour urines. The use of standard three hour urines will reduce to a minimum the extent to which the work can be ruined by carelessness or incompetence on the part of nurses; in fact, the nurse's part of the work will be almost eliminated. Private patients, even office patients, and outpatients in the hospitals, can be included in our metabolism investigations if we once get our metabolism period reduced from twenty-four hours to three hours.

For such work we shall need a large series of normal figures corresponding to the twenty-four hour figures which have been used in the past. I hope shortly to furnish such figures for the first three hour morning period and for a second period representing the effect of a standard test meal.

The practical advantages to urine analysis derived from the speedy microchemical colorimetric methods are less fundamental than are the advantages gained from the application of the same principles to the analysis of blood. Before the introduction of these methods one could hardly say that there was such a thing as quantitative blood analysis. There were no definitely recognized methods, and in the scattered analyses attempted each investigator usually improvised some sort of procedure according to his own light and without reference to any general need for some system of blood analysis. For a qualitative test for uric acid in blood, from 100 to 200 c.c. were required, and even then positive results were obtained only with blood abnormally rich in uric acid. Today we can make quantitative uric acid determinations on any kind of human blood, and do not need more than 10 c.c. for the determination. If necessary we can make the determination with 5 c.c. or less.

The merit of the newer microchemical system of blood analysis was convincingly demonstrated in connection with studies on the problem of protein absorption. For more than a generation different investigators had tried over and over again to demonstrate the nitrogenous digestion products in the blood stream, but had failed, and we had nothing but unproved hypotheses with which to explain the absorption of albuminous food. This problem became acute when it was shown by Kutscher, at the beginning of the present century, that the pancreatic digestion is capable of completely destroying the protein character of albuminous materials. The earlier investigators worked with anywhere from 100 c.c. up to several liters of blood in attempts to solve this problem, and failed. Working with from 2 to 5 c.c. of blood by the micromethods, it was shown with absolute certainty that the old hypotheses were false, that the simple digestion products elucidated by Kutscher were readily and rapidly absorbed. The products could be traced through different parts of the circulation and even into the various tissues of the body.

The methods were equally applicable to the determination of the waste products produced within the tissues. In studying these phenomena, the results obtained were as clear as if we had actually seen the digestion products (the amino-acids) pass into the blood and into the tissues, there to linger awhile, and finally break down and yield urea. To any one who has actually followed this process, as Dr. Denis and I followed it in cats, there can be no doubt as to the essential features of protein metabolism, and the ability of muscular tissues to form urea. Nor can there be any doubt about the important fact that metabolism products pass with great speed and readiness from the blood into the tissues, and vice versa. There is every reason to believe that when we determine the urea content of the blood we are at the same time determining approximately the urea concentration of the muscles.

The speed with which a condition of approximate equilibrium is established between the blood and the

tissues in the case of ordinary soluble products has never received the consideration and study that this phenomenon deserves. The literature abounds in explanations of clinical or metabolism problems based on the assumption that the blood is almost a closed system with reference to the general tissues of the body. I doubt not but that there is such a thing as selective affinity between this or that product and this or that tissue. There must be some specific cause, however, for every case of such selective accumulation, for each case must be regarded as more or less of an exception to a general rule.

As an interesting erroneous explanation of an important metabolism problem based on a misconception as to the equilibrium phenomenon between the blood and the tissues may be mentioned the old hypothesis that creatin is the intermediate product in the breakdown of body protein into urea.

The muscles are relatively loaded with this simple crystallizable product, creatin, and it was indeed plausible to assume that this highly nitrogenous extractive, a hundred times as abundant in the muscles as in the blood, must be the connecting link between the broken down tissue protein and the urea. Feeding experiments with creatin did not yield urea; but to this Bunge retorted that creatin, when fed as such, does not have time to get into the tissues and is eliminated before there has been a chance to accomplish the conversion into urea. Both the original hypothesis and Bunge's auxiliary hypothesis advanced in its defense are thus clearly seen to assume the absence of the equilibrium phenomenon referred to. The fallacy in Bunge's argument has never been pointed out so far as I know, and it was not until three or four years ago that it was shown by microchemical analysis that Bunge's argument was false: that, in point of fact, creatin is readily absorbed from the blood by the tissues.

While the view that creatin is the chief precursor of urea was long ago abandoned, many still believe that a part of the urea is so produced. The important point, however, is that creatin is not to be regarded as essentially a precursor of urea, and that we accordingly must find some other explanation of why the muscles contain such large amounts of creatin. This is a problem of normal metabolsim rather than of clinical or experimental medicine. Whether out of it will grow any clinical problems we cannot yet tell. Human beings do not lend themselves to tissue analysis.

Before I go any further it is perhaps well that I should indicate a little more definitely the character and scope of the microchemical methods already in use for the analysis of blood. We have then, first of all, the colorimetric methods for the determination of each of the chief nitrogenous substances found in urine, that is to say, the total nonprotein nitrogen, the urea, the ammonia, the uric acid, the creatin and the creatinin. In addition we have Bloor's micromethods for the lipoids-fat, lecithin, and cholesterol; Marriott's nephelometric methods for the acetone bodies; Benedict's method for the blood sugar, and finally Lyman's very recent method for calcium. The remarkable thing about this series of methods is that they are devised with reference to a single instrument, the colorimeter, which can also be used as a nephelometer. With the combined instrument we simply measure the amount of color which the substance to be determined can be made to give with some suitable reagent, or we measure the cloudiness, if the characteristic reaction used results in a precipitation instead of a color. In principle these methods are somewhat similar to the clinical method of determining the hemoglobin in blood. In the analytic methods of earlier times the investigators proceeded on the principle that the amount of material taken for each analysis must be inversely proportional to its concentration of the substance to be determined, and this principle, for obvious reasons, virtually excluded human blood or blood from small laboratory animals. In the microchemical system of analysis, on the other hand, the guiding principle is to overcome the lack of concentration and the limited supply of blood by the application of correspondingly intense and sensitive reactions. The amount of blood used for each determination in the series mentioned above varies from a fraction of 1 c.c. up to 10 c.c. To be strictly practical, a blood method must not require more than 10 c.c. of blood, and its value is greatly increased if it can be applied to 5 c.c. or less. On the other hand, when one attempts to work with too insignificant quantities, that is, with drops of blood, the technic again ceases to be practical, because this can be done only by a complicated system of weighing instead of measuring the blood taken. This modern system of blood analysis has all been developed within the past six or seven years, and it is still not complete.

I have made no reference to other recent useful analytic procedures, such as Van Slyke's methods for amino-acid nitrogen and for chlorids.

We are still in the early stages of a pioneer period of research opened by means of all this new technic, but it is clear that much research lies ahead of us with reference both to physiologic and to clinical problems. As yet there is not always sufficient agreement as to the values which should be accepted as strictly normal. Take the nonprotein nitrogen and urea, for example. There is no doubt, I think, that in case of strictly normal persons such as we find among medical students (or outside of hospitals), the nonprotein nitrogen content and urea content of blood are low. The nonprotein nitrogen will not exceed 28, or at the most 30 mg. per hundred c.c. of blood, and the urea nitrogen will be almost exactly one half of the nonprotein nitrogen. Nor are these levels materially affected by reasonable variations in the nitrogen content of the food. To me it seems a matter of considerable significance that we have to accept as normal considerably higher levels just as soon as we begin to work on hospital patients. Here values lying between 30 and 40 are quite as common as values under 30. There can be no doubt about the fact that efficiency of the kidneys is the chief factor which determines the level of waste products which any individual carries in his blood and tissues. The higher levels of waste products found among hospital patients must therefore indicate that at least one half of these persons have kidneys which are no longer perfect, kidneys which at one time or another and in one way or another have been damaged. Is this a clinical problem? As yet there has, of course, not been time enough to find out whether the less efficient kidneys are in a stationary condition or whether they are in a slow process of deterioration. In time the records of physicians and of hospitals ought to throw light on this problem.

One interesting aspect of the nonprotein nitrogen and urea problem is the question as to the effect of the

food protein on the level maintained. In the case of strictly normal persons it makes practically no difference whether the diet is rich or poor in nitrogen. In persons having clinically damaged kidneys, the protein content of the food makes a great deal of difference. In many such cases (but not in all) it is possible by means of low nitrogen diets to reduce the nitrogen level of the blood to nearly or quite the normal level. The further elucidation of this point is, I should say, a clinical problem. In this connection one would naturally ask whether it makes any practical difference, or any difference, to the well-being of patients whether they carry a normal or high level of waste products in their blood. This is an obscure problem. As the level of nonprotein nitrogen in blood is raised, the percentage of the urea fraction of that nitrogen increases. When the nitrogen is very high, as in certain cases of threatened uremia, by far the greater proportion of the blood nitrogen (nonprotein nitrogen) is represented by urea.

Urea is believed to be harmless, and it is certainly true that a good many nephritic patients can go about feeling well, and yet carry as much as 100 mg. of urea nitrogen in their blood, while others go into so-called uremic coma without carrying any unduly high levels of nonprotein nitrogen or urea. Uremic attacks with low levels of blood nitrogen happen perhaps most frequently in cases of so-called toxic pregnancy. All this has been known for a long time.

We have lately taken up the study of blood in pregnancy partly for the purpose of verifying the findings previously reported by others, and partly with the hope of being able to advance the subject a little further.

The results which we have obtained have proved rather surprising, and are at least interesting. Our subjects are obtained from the Boston Lying-In Hospital, and we are indebted to Dr. Newell for the privilege. Indeed, the research is essentially a cooperative one between Dr. Newell, Mr. Foster and myself.

We have thus far analyzed the blood of about 100 pregnant women, most of them clinically normal. As yet we have paid attention only to the nonprotein nitrogen and urea. From the class of patients to which these women naturally belong we should expect to find substantially the same rather high level of nonprotein nitrogen and urea as we find in other hospital patients.

Such is not the case. Very few pregnant women, except the toxemic ones, give a nonprotein nitrogen over 30 mg. per hundred c.c. The more interesting fact, however, is that the urea of blood obtained from normal pregnant women is practically without exception very much smaller than the amounts of urea found in other normal human blood. Such other human blood does not contain less than 11 or 12 mg. of urea nitrogen per hundred c.c. The bloods of pregnant women, on the other hand, run between 5 and 9 mg., and very few indeed run as high as 9 mg. of urea nitrogen for 100 c.c. of blood. Whereas in other normal persons the urea nitrogen represents 50 per cent. or more of the total nonprotein nitrogen, in these bloods it represents only from 20 to 35 per cent. of the total.

Several investigators have recently published some observations on blood in pregnancy, and I am at a loss to explain their results. They have, to be sure, found a few low urea figures, but these have been exceptional, and they have thus failed to find this peculiar characteristic of pregnancy.

I would hesitate as yet to try to explain this remarkable phenomenon. The problem is complicated by the fact that we do not possess full information as to the percentage distribution of the nonprotein nitrogen of normal blood. We have been going on the assumption that this nitrogen, so far as it is not accounted for by the ordinary waste products, must be largely amino-acids, that is, valuable food products. This assumption is probably not quite correct, for the figures obtained by Van Slyke's method for amino-acids leave a considerable proportion of the nonprotein nitrogen of blood unaccounted for. Two thoughts naturally suggest themselves in connection with our peculiar analytic findings. A low proportion of urea should leave a higher proportion of amino-acids and other similar products (possibly peptids), and it is conceivable that this is the result of a mechanism for providing a more abundant and constant supply of the kind of nitrogenous food materials needed by the growing fetus. The other thought is this: The pregnant organism may be more susceptible than others to the toxic effects of certain waste products, and in self defense may be compelled to keep these waste products, including urea, at a subnormal level. This thought is rather attractive, for it contains the added hint that the blood in toxemic pregnancies may be abnormally rich in toxic products, even when the total amount of nonprotein blood nitrogen is not very high; from 35 to 40 mg. of nonprotein nitrogen in such blood may be an entirely different proposition from the same amount in other subjects. Whatever the correct explanation may be, the fact itself is, I think, decidedly interesting.

I have already referred once to Abderhalden's pregnancy test. The thought has, of course, occurred to us that urea determinations in the blood may have some diagnostic value with reference to pregnancy. But as yet we have had only a few cases representing the third month of pregnancy and no earlier ones. I therefore make absolutely no claims in this direction.

Before leaving the subject of the nonprotein nitrogen and urea, I ought perhaps to refer briefly once more to the use and value of these determinations as means of estimating the renal efficiency, and to the "refinement" represented by the so-called Ambard coefficient, which is simply a combination of urea determinations in blood and in the urine. The underlying idea of this combination is to eliminate any confusion which might arise because of changes in the blood concentration (in urea) due to the level of the general protein metabolism. In normal persons, as I have already indicated, there is no material change in the urea content of the blood because of changes in the level of the nitrogen metabolism. In nephritics, considerable variations can be produced by changes in the diet; but these changes are produced very slowly so that it usually requires several days of low protein feeding to produce a marked alteration in the urea content of the blood. Yet nephritics, like normal persons, adapt themselves promptly to changes in the protein content of the food, and, like normal persons, tend to remain in a condition of nitrogen equilibrium. The complicated mathematical formulas introduced in connection with the Ambard coefficient do not tend to increase one's confidence in that coefficient. It is difficult to see how square roots and cube roots can help to elucidate such a simple metabolism proposition.

Work along the lines of the Ambard coefficient is one of the researches I had in mind in stating that many metabolism investigations based on metabolism periods shorter than twenty-four hours are now being made. The Ambard period, seventy-two minutes, seems to me, however, to be too short. I believe that a more suitable condition for studying the effects of the metabolism level on the urea retention will be found in connection with the three hour metabolism period to which I have already referred.

Determinations of nonprotein nitrogen and urea in blood have up to date proved the most popular in the study of blood. This is natural enough, at least so far as it concerns clinicians, because these determinations stand for concepts which to them are perfectly clear.

A theoretically equally interesting determination in connection with certain clinical problems should be that of the ammonia. Ammonia determinations in urine have become important in connection with the study of acidosis. Very few, however, have ventured to undertake the determination of ammonia in blood, notwithstanding the fact that it has figured very extensively in attempts to make ammonia responsible both for uremic and for diabetic coma. It is not difficult to see why this field is being neglected. No one recognizes more clearly than I do that the method for the determination of this substance in blood is far from easy. Moreover, the amount of ammonia present in blood is so small that it is difficult to see how these traces can be of much clinical significance. It is an interesting and remarkable fact that even in diabetic acidosis, when the daily urine may contain several grams of ammonia, the concentration of ammonia does apparently remain at an extraordinarily low level in the blood. If any one should here attempt to apply an "Ambard coefficient," he would doubtless be led into the very highest fields of mathematics before a satisfactory formula could be obtained. I sometimes suspect that there is something wrong about our ammonia determinations in blood. Dr. Denis and I have repeatedly returned to the investigation of the subject; we have spent several weeks on it again this year, but as yet have found nothing to indicate that our earlier work is not substantially correct. Henriques, in Denmark, has recently published an apparently very thorough research on the same topic, and has in the main verified our findings. For the present, therefore, the problem of the ammonia in blood remains as before, theoretically interesting, but practically unfruitful.

For several years the determination of creatinin in urine has been used and accepted as an indispensable feature of every metabolism investigation involving urine analysis. In hospital work this determination is absolutely necessary as a check on the work of the nurses. It is the only means we have for detecting gross errors in the collection of the urine. Every other urinary constituent may vary up and down, but the creatinin remains practically constant, so that when a patient's creatinin output begins to show remarkable variations it is time to give up the experiment or begin all over again.

The creatinin in the blood is normally not large, 1 or 2 mg. per hundred c.c. of blood, but it is normally constant and easily determined. I say this advisedly, though I recognize that one investigator has lately published results purporting to prove that the values as ordinarily obtained are several times as great as the true creatinin content of blood.

The creatinin is one of the last waste products to accumulate in the blood as a result of kidney insufficiency. It is apparently only in rather advanced uremic conditions that this product begins to increase in the blood. A great many more observations are needed, however, on this point, and as the determination is easy and simple when a standard creatinin solution has once been obtained, it is a determination which should be taken up by clinicians. The only reason why clinical workers have not already stepped into this field is the fact that pure creatinin, or a pure creatinin salt, is needed for the standard solution which must be used in connection with the colorimetric determinations.

It seems strange that no chemical manufacturer has yet undertaken to prepare creatinin zinc chlorid to meet the demand for this salt.

Pure creatinin can, as a matter of fact, be dispensed with in connection with this determination. It takes only a few minutes' work to determine colorimetrically the creatinin content of normal urine by the help of my older potassium bichromate method. By appropriate dilution of such urine with half normal hydrochloric acid a perfectly serviceable standard creatinin solution is obtained, and this solution will keep for weeks, if not indefinitely, so far as the creatinin content is concerned. The changes which do occur, darkening in color, precipitation of uric acid, etc., do not destroy the value of the solution as a creatinin standard.

Among the waste products of the animal metabolism there is none more interesting, alike to the laboratory worker and to the clinician, than uric acid. From the standpoint of normal metabolism it is generally believed that the uric acid problem is very nearly settled. I am less sure on the subject now that I would have been two or three years ago. The remarkable results reported by S. R. Benedict on the presence of extraordinary quantities of latent uric acid in beef blood, his demonstration of a synthesis of uric acid in Dalmatian dogs, and his findings indicating that the allantoin in dog urine does not represent decomposed uric acid, all indicate that we may yet have to revise in radical fashion views which but a short time ago seemed firmly established. The many vague clinical hypotheses which used to be associated with uric acid have, however, been swept aside. The uric acid crank has all but disappeared from among the medical profession. As a problem of comparative physiology, uric acid is exceedingly interesting, and from the standpoint of both clinical and experimental medicine it is yet destined to be the subject of many investigations.

The human organism has the almost unique distinction among mammals of not being able to destroy any of the uric acid which it produces. The human kidney is also less competent to get rid of this waste product than we could wish. In consequence of this combination of circumstances, the quantitative determination of uric acid in the blood is one of great promise and importance. The method for this determination is of such recent origin that the modern literature on the uric acid in blood is not large, and yet there is already considerable diversity of opinion concerning both the uric acid content of normal blood and the pathologic fluctuations which may occur. How far these differences may be due to imperfections in the analytic method or to lack of skill in the use of the method I am not prepared to say.

It is absolutely certain, however, that some kinds of human blood carry abnormally large amounts of uric acid and at the same time substantially normal amounts of nonprotein nitrogen and urea. It is equally certain that other kinds of blood carry substantially normal amounts of uric acid, yet exceedingly large amounts of total nonprotein nitrogen and urea. The former condition, as was to be expected, is most frequently found in gout, the latter in nephritis. The high uric acid in the blood of the gouty, like the high urea in the blood of nephritics, is due to lack of excretory power on the part of the kidneys and not to increased production of uric acid (or of urea).

With reference to the origin of the uric acid produced within the body, we cannot yet say how large a proportion comes from the muscles and how much from glandular organs. That the glands, at least in proportion to their size, are by far the most important centers of uric acid production follows as a matter of course from our present day teachings and beliefs to the effect that uric acid is formed in or from the nuclei of cells. The validity of this view can be experimentally demonstrated. Even in laboratory animals whose blood and muscles contain very minute traces of uric acid, we find in the spleen, liver, etc., as much as from 10 to 14 mg. per hundred gm. of organ, that is, fully twenty times as much as we find in the blood or the muscles.

I have confined this discussion to a consideration of only a few familiar waste products. As we get into the field of blood and tissue analysis, as we get into experimental touch with the chemical processes going on within the body, we must also begin to pay more attention to products which never find their way into the urine. I must not close without having called attention to the very interesting and promising line of research in the field of the lipoids—a field opened by the application of micromethods worked out by Dr. Bloor. Already Bloor has established the normal relationship existing between these lipoids—fat, lecithin, cholesterol—and the results obtained seem to furnish a basis for a more detailed knowledge concerning the intermediate processes involved in the metabolism of the fats. The extraordinarily practical character of the analytic procedures developed for this work should insure the attention of the clinician, for the fats, no less than the proteins, are associated with many metabolism disorders; I need but refer to malnutrition in infants, pathologic obesity, lipemia, and diabetes.

Before closing I wish also to make just one brief reference to another class of products in the study of which a beginning has been made on the basis of microchemical methods. I mean the phenols. As yet we have not gone beyond the urine, however, in the study of these substances (which, as you know, are chiefly the products of intestinal putrefaction, and at least some of which are distinctly poisonous). I had hoped before this to have definite methods for the determination of phenols in blood, for it is their concentration in the blood, not the amount in the urine, which is significant in relation to diseases. We have run into these products both in connection with studies on epinephrin, which is a phenol, and in connection with uric acid, which in chemical constitution and in many of its reactions is also similar to the phenols. These very similarities are the difficulties against which we have to contend when endeavoring to determine the ordinary phenols in blood. It is a difficult problem, but in time it will be solved.

It will seem to you that I have discussed little else than analytic methods—a subject which cannot be made very interesting outside of the laboratory. I am convinced, however, that both the biochemist and the clinician must pay more and more attention to this least interesting but most important aspect of research. Scientists of earlier generations discovered a great many important facts in the realm of metabolism and of medicine. It will be found on scrutiny, however, that their discoveries were accidental or of such a character that they were bound to be made by one or another reasonably keen observer. That pioneer stage is over. The surface problems have been solved.

It is now only by means of finer and ever finer technic that progress can be made toward the solution of the many metabolism problems which must be solved by us and those who folow us, in order to secure an increasingly better basis for clinical, experimental, and, above all, preventive medicine.

DECENCY AND SAFETY AS PUBLIC HEALTH FACTORS

CHARLES E. NORTH, M.D.
NEW YORK

The detached point of view is often mentioned in modern literature as the property of a few select minds. To be impersonal, to get away from detail, and especially to get away from the narrow point of view of the specialist, is extremely difficult in this age of specialization. The strongest objection that can be raised against specialization is that it anchors the mind in a narrow channel, and creates habits of thought that prevent the specialist from estimating the value of even his own specialty.

The truly scientific point of view should be sufficiently detached to see the relation that things bear to each other in their true proportion. It should be close enough to recognize clearly the character of the data available on special subjects, and distant enough to make a comparison of values. The correct balance must be one that does not overestimate or underestimate.

A survey of the progress that has been made in public health science shows that it has been marked by the rapid development of a number of branches of special knowledge. Public health science has created a new field for the specialist. The chemist, the bacteriologist, the physican, the sanitarian, the statistician and the engineer have all found new territories for the rapid and fruitful development of their specialties. The field of effort is so new that it has been largely unexplored, and the pioneers have found their work as yet uncoordinated, and the value that should be put on it still undetermined.

Numerous important factors have been discovered which contribute in marked manner to the public health. The development of these has not been regular, but irregular, and some have been pushed forward while others have lagged behind. Just what qualifications justify the recognition of a principle as an important factor in public health science is still debatable.

Like other sciences, the science of public health has been accompanied by a background of philosophy, and

the philosophers have been divided into a school of realists and a school of idealists. The irrepressible conflict between the practical and the academic is again being fought out in this new realm. In this instance, the issue at stake is of more importance to the vitality of civilization than any previous battle between these two groups of philosophers. There are, on the one hand, those who consider that public health should concern itself only with direct causes of disease. They are pragmatists, and look with some degree of ridicule on their more esthetic opponents. Their slogan is safety. Safety first, it must be admitted, is the foundation stone of public health science. Life comes before health. To this extent the realists are justified in their practical point of view. They are supported by the character of the public health laws that have already been written. They are also supported by the attitude of the courts. To them the main question at issue is always between safety and danger. In their catalogue, public health is concerned chiefly with quarantine as a remedy for epidemics, with sanitation as a remedy for contagion, and with sterilization as a remedy for infection. All they ask of the courts is to enforce the law against those things which are dangerous to health.

On the other hand, there has been a steady growth of the ranks of academic philosophers who are devoted to the cultivation of sentiment. Sentiment and the esthetic sense, they believe, have a value which has been neglected by the school of pragmatists. In their survey of the progress of the race, as well as of the individual, they lay claim to the discovery that sentiment lies at the basis of all joys. Even the desire for life, they maintain, is only a sentiment. They refuse to draw the line sharply between the practical and the academic. They assert that it is the stage that has been reached in the evolution of the species or of the individual which dictates what should be included or excluded from consideration by public health science. They point out that the word "health" is a large word, and that it should include much more than the question of safety. They admit the importance of safety, but assert that safety alone is not enough. They join the framers of the constitution in believing that the individual is entitled, not only to life and liberty, but also to the pursuit of happiness. They firmly believe that the enjoyment of life is just as important as life itself, and that health in its true sense must include "living" as well as existence.

THE ELEMENT OF DECENCY

"Decency" is a word that formerly had a rather limited meaning. In recent years this word has been broadened so as to signify much that contributes to the enjoyment of one's food and drink, and one's surroundings. For example, sanitation has contributed very largely to the decency of dwellings through the removal of objects offensive to the eye, and perhaps also to the nose, although not necessarily directly dangerous to health. Cleanliness of streets and houses and of the environment was formerly urged by the realists in the belief that disease originated mainly in the environment. The discovery that sources of infection are mainly human and animal, and that disease is transmitted for the most part by direct contact, has justified the abandonment of sanitary inspection and sanitation so far as they are concerned with the environment as the cause of disease. Nevertheless, the idealist still insists on cleanliness and sanitation as necessary public health measures. The cleaning of streets and of dwellings will still continue, but not for the old reasons. The sense of decency properly describes the sentiment that at the present time stimulates the carrying out of clean-up campaigns.

A much more important application of the sense of decency is found in relation to food and drink. It is instinctive among well bred people to desire only food and drink that is clean, irrespective of considerations of safety. While this instinct may have had its origin in a race experience that proved the connection often existing between dirt and disease, yet culture has developed this instinct to such an extent that the enjoyment of food and drink is destroyed if these are known to be insanitary.

Legal recognition of the requirements of decency are contained in the federal pure food law, which prohibits the sale in interstate commerce of any food or drink that is "filthy, putrid or decomposed." While these words may have been embodied in the law because they were believed to provide the element of safety, yet they cannot be interpreted otherwise than as words that also include a large element of decency. Filth may not be dangerous, and still be filth. A food that is correctly characterized by all three of the words "filthy, putrid or decomposed" might be boiled or sterilized until it was safe, so far as disease is concerned, but still be unfit for food according to the provisions of this law.

For example, eggs that have become decomposed have been put on the market in a liquid or dried or frozen condition, and have been condemned without positive evidence of danger, but on the ground that they are offensive because filthy, putrid or decomposed.

The single service package is coming into use. Paper wrappings are being adopted for bread, and crackers, and other foods that were formerly dispensed loose. The safety element may also be a factor in this campaign for single service; but in the minds of the consumer the decency element is a much more powerful factor. The consumer prefers clean bread, clean crackers, clean fruit, clean candy, because cleanliness contributes to pleasure in consuming food.

The consumer is entitled to the enjoyment of food and drink, as well as to their being safe. The factor of decency is creeping into health regulations almost imperceptibly. One of the most notable examples of this is the recent adoption of the grading system for the control of municipal milk supplies. In this system milk is graded according to its sanitary character into three grades, labeled A, B and C. In all three grades the milk is pasteurized, and if the process of pasteurization is properly carried out, the milk is entirely safe because those species of bacteria causing disease have been destroyed. Most sanitarians are inclined to believe that as a measure of safety, pasteurization is, in fact, effective in rendering all milk safe, irrespective of its previous sanitary condition. It is true that some experts assert that there may be toxins remaining in unclean milk after pasteurization, or that some spore-forming bacteria outside of the list of recognized pathogenic species may be injurious to infants and children. In general, however, there is good evidence that the differences in safety between milks that are sanitary and insanitary, provided these are properly pasteurized, are comparatively slight. This being so, the question arises, Why should milk be graded? The answer is that the masses of milk consumers have the sense of decency sufficiently developed actually to pre-

fer as a beverage a milk that has had a clean history to a milk that has had an unclean history, even if they know that the two milks are equally safe. Analyzed more closely, this is because there is more enjoyment in drinking clean milk, and less enjoyment in drinking unclean milk.

THE PURITY OF WATER

Of late the esthetic philosophers have brought up the same issue in connection with public water supplies. The words "pure and wholesome" appear in almost all water contracts as describing the quality of the water to be used by municipalities. The definition of the word "pure" as applied to water seems still to be a debatable question. There are apparently many kinds and degrees of purity. The introduction of laboratory tests by chemical methods was at first thought to be a fair means of settling this controversy. The refinement of chemical methods seemed to promise the discovery of all forms of water impurity, so that a water free from impurity could be distinguished from one that had been contaminated in any way. The fallacy of this belief became apparent immediately on the advent of bacterial methods of water analysis. It was soon recognized that water apparently pure by chemical tests might be exceedingly impure by bacterial tests. Sanitarians once more believed that in the bacterial test they had at last discovered a criterion by which the purity or impurity of water could be judged. And now the integrity of the bacterial test as a measure of impurity has been shattered by the advent of methods of sterilization. Chlorinated lime (bleaching powder) or chlorin gas can be applied to any water—no matter how impure or how badly infected with bacteria—and after such application the bacteria will be so completely destroyed that so far as the laboratory test for bacteria is concerned, the water will appear to be practically sterile. Thus, the measurement of purity by the bacterial test can be completely nullified by previous sterilization processes.

It is now a very lively question as to what public health experts mean by the word "pure" as applied to water. For example, if one assumes that a water comes from a surface supply and receives on the watershed large quantities of sewage, but that it is then impounded in a reservoir in which considerable sedimentation takes place, and is then sterilized with hypochlorite solution so that the bacteria are killed, is such a water to be accepted as qualified to receive the designation "pure"? Or, on the other hand, if one assumes that a municipal water supply comes from an uninhabited territory, such as woodland lakes, and receives no sewage from human habitations, and hence no form of treatment is necessary, is such a water more deserving of the term "pure" than the water in the former case?

Most of the cities on the Great Lakes, both in Canada and in the United States, use the Great Lakes not only as sources of water supply but also as mechanisms for sewage disposal. Projecting from one part of the city are pipes discharging sewage into the lakes, and more or less close by, from another part of the same city, extend pipes through which lake water is pumped into the city for drinking purposes. From time to time public sentiment has contended that the two pipe lines were too close together. Chicago actually decided to withdraw most of the sewage from the lake and discharge it into the Illinois River, which flows into the Mississippi above St. Louis, thereby handing the sewage which Chicago citizens disliked to the citizens of St. Louis for drinking purposes. In Cleveland and other cities, public sentiment from time to time has forced the city to extend the pipe line drawing water from the lakes beyond the zone supposed to be invaded by sewage. At Toronto and Milwaukee, systems of purification and sterilization have been installed on the theory that though the sewage is mixed with the drinking water, it can be rendered pure by sufficient treatment. The St. Louis courts, when appealed to, decided that the Mississippi River water, even though polluted with the sewage of Chicago, corresponded to reasonable standards of purity.

The city of Fulton, N. Y., has a public water supply coming from a well known spring, and the streets are sprinkled with the same spring water that is sold in bottles to other municipalities.

It is a fair question to ask whether a distinction should be made between a purity of water due to prevention of contamination, and a purity due to various forms of treatment. From the consumer's standpoint, this question can be judged just as in the case of milk and foods. When the consumer is presented with two glasses of water and informed that both of them are free from bacteria, and can observe that both are clear and free from odor and sediment, and is assured that both taste equally well, the question arises, Will the consumer be prompted to exercise any serious choice when informed that one of these waters was polluted with sewage while the other was not? I think it is reasonable to suppose that the masses of the people have a sense of decency developed to such an extent that without hesitation they will voluntarily choose to drink the water that has never been contaminated with sewage.

It is undoubtedly for this reason that all of the offices of the city hall at Jersey City, N. J., are supplied with bottled spring water for politicians to drink, in spite of the fact that the courts have decided that the municipal water supply of Jersey City is pure and wholesome, though it is contaminated with the sewage of the cities on the watershed, because the water is sterilized with chlorinated lime. It is undoubtedly for the same reason that the office buildings of New York City are supplied with bottled spring water for the business men of New York to drink in spite of the fact that the Croton and Catskill supplies are also sterilized with chlorinated lime. In these instances, the politicians and business men referred to seem to have allied themselves with the ranks of the esthetic philosophers, as opposed to the pragmatists.

THE DETERMINATION OF DECENCY AND PURITY

But our friends among the pragmatists are prepared to assert that there is no practical way of determining purity in the esthetic sense. They will maintain that the courts cannot recognize the sense of decency because regulations cannot be written in such terms. They are inclined to limit our public health propaganda, not only to measures of safety, but also to standards of cleanliness that can be determined by the chemical and bacterial laboratories. They assert that there is no other method of measurement feasible, and that public health officials and the courts cannot give consideration to distinctions that are purely academic. For example, cow manure in milk is academic, or sewage in water is academic, if the quantity cannot be accurately determined by chemical or bacterial tests. The answer to this objection, so far as the courts are

concerned, is that the courts can always apply the general method of measurement that is commonly used by them in determining the meaning of other defining words. This method consists in the use of the meaning commonly accepted by the masses of the people. For example, if the word "pure" as applied to water means "free from sewage" in the minds of the masses of the people, and this feeling is so strong that the masses of the people prefer to drink a water free from sewage to a water that has been contaminated with sewage, the courts will accept this attitude of the people as a proper means of determining the significance of the word "pure" as applied to water. The degree of importance that must be attached to the element of decency as it relates to any particular thing can at any time be determined by testing public sentiment on this subject.

What attitude should the leaders in public health science take with regard to decency as a public health factor? Shall they encourage the development of the sense of decency on the part of the public as a desirable thing, and as something that can be applied to public and private environment, and to food and drink, in a way so practical that a reasonable degree of decency can be enforced by public officials? Or shall the leaders in public health science conclude that decency is academic, and that the esthetic sense has no place in the list of considerations on which the activities of public health officials are based? If health means more than life, if health includes the enjoyment of life, if health is to include the enjoyment of one's environment, and the enjoyment of things one eats and drinks, then public health administration cannot ignore the demands of common decency in the steps that it takes to safeguard public health.

The progress of the people toward better things seems to be constantly marked by improved sanitation. Public sanitation and private sanitation contribute directly and indirectly in so many ways to better living, better thinking and better working that they seem to be an essential part of the process of development. Whether or not the workers in public health science recognize decency as an important factor in public health science, the common people themselves have already given decency such recognition. The reason the instinct for cleanliness and decency has developed with the race is that these contribute in a marked degree to the satisfaction of living. If public health includes anything more than the element of safety, then decency for its own sake deserves a place in the catalogue of public health administrators.

30 Church Street.

Marching.—While the present war especially in the western regions has involved much trench fighting, besieging, etc., it must be borne in mind that marching still occupies much of the soldier's time, much more than does combat. This is clearly seen in the Russian campaigns. For this reason it is of prime importance that the soldier be able to march well. The general public have a mistaken idea of the length of a heavy march, the tendency being to place the estimate altogether too high. A fair day's marching for any army is 12 miles. The strenuousness of the march depends to a large extent on the size of the marching force. A good day's march consists of 15 miles while 20 constitutes a forced march. Quick time for the English armies consists in about 120, 30-inch steps per minute, which gives 100 yards per minute. From 2½ to 3 miles per hour is good marching. It takes a brigade six hours to march 15 miles while a division needs eight for the same distance.—Hygiene and War, by George Ellis Jones, Ph.D.

TREATMENT OF CHANCROID*

FREDERICK W. ROBBINS, M.D.
Fellow of the American College of Surgeons
AND
FRANK P. SEABURY, M.D.
DETROIT

We recognize four clinical varieties of chancroid:

1. Ulcus molle, the ordinary variety of ulcer, has the characteristic punched-out appearance, with edges cleancut and often undermined.

2. Ulcus molle miliare begins as a small papule, which rapidly becomes a pustule, the center of which is a deep craterlike ulcer. It occurs most frequently on exposed surfaces in the loose skin, just posterior to the mucocutaneous junction of the prepuce in man and about the labia majora and the perineum in woman.

3. Ulcus molle elevatum is the sore most frequently confused with indurated chancre. Its incubation period is from nine to twenty-one days. The sore is slightly raised above a mildly infiltrated base. The edges are not undermined, and it has little tendency to spread. This form is resistant to ordinary treatment and is prone to persist for from four to eight weeks.

4. Ulcus molle phagedenicum is the most severe and the most resistant form with which we are familiar, and occurs as a complication of both chancroid and syphilis. It spreads rapidly, is made worse by any half-way measures, and, unless checked early, is capable of destroying a part or even the whole of the penis.

To these McDonagh adds a fifth classification, the ulcus molle serpiginosum. This ulcer may occur as a complication of bubo or it may begin as a furuncle in the groin. It is found chiefly in the tropics, is highly resistant to all forms of treatment, and frequently remains a slowly spreading ulcer for years. We have never encountered it in this country.

The treatment of chancroid, at the best, is unsatisfactory, as is evidenced by the great variety in the methods of treatment advocated by different authors. If seen early, a fair percentage of patients do well under nearly any antiseptic treatment, particularly if they are cleanly in their habits. In fact, we believe that 60 per cent. of chancroids, taken as they come, of anywhere from two days to two months' duration, will heal in from four to eight weeks with no treatment except rigid cleanliness, a little calomel, or other dusting powder, if the sore is within the preputial cavity, or a moist dressing of black wash if the sore is exposed. If seen within the first two or three days, thorough cauterization with nitric acid is quite successful, but great care must be used not only to destroy completely every sore, but to keep the surrounding tissue covered with an antiseptic until healing of the cauterized areas is complete.

It is the sores that are not seen early, or that are not favorably influenced by cauterization, which cause the trouble and for which we have never been able to find in the literature a thoroughly satisfactory method of treatment.

Zinc ionization gives good results, but requires special apparatus and consumes considerable time. Argyrol crystals applied directly to the sore for three

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

or four minutes, followed by a moist dressing of 10 per cent. argyrol or 1 per cent. protargol, have been satisfactory in a few cases; in others they have not even checked the spreading of the ulcer.

A satisfactory method of treatment for the large majority of cases of chancroid in the preputial cavity is the thorough application of a 25 per cent. solution of copper sulphate crystals in water. The ulcer is first anesthetized with a 10 per cent. cocain solution and then lightly curetted with an applicator wound firmly with cotton, after which the copper solution is applied. It is left in contact with the sore for three

In order that a method of treatment of chancroids may be regarded as satisfactory, it must not only effect a complete sterilization of the sore and thereby a cure of practically all cases within a reasonable length of time, but in order to be available to the large majority of physicians, it must also be comparatively simple in form and means of application. Such a method, or combination of methods, we believe we have devised, and we base our conclusions on the observation of about sixty cases during the past year. In this series we have had practically 100 per cent. of early cures.

RESULTS OF AUTHORS' METHOD OF TREATMENT IN THIRTY-FOUR CASES

Case No.	No. of Lesions	Incubation Period	Previous Treatment	Duration Before Fulguration	Darkfield or Stain	Diagnosis*	Number of Treatments with Violet Ray	Healed	Bubo	Wassermann	Remarks
1	1	7 days	No	2 weeks	Negative	U. M.	One	8 days	No	None	
2	2	13 days	Argyrol dusting powder	2 months	Negative	U. M. M.	One	9 days	Yes, not opened	Negative	Bubo subsided
3	1	7-8 days	Argyrol crys.	4 weeks	Not made	U. M.	One	7 days	No	None	
4	3	7 days	No	1 day	Negative	N. M.	One	11 days	No	Negative	2 or 3 sores healed in 4 days
5	2	4 days	Caustic argyrol and violet ray	6 weeks	Negative	U. M. M.	One	7 days	No	None	Exposed sore
6	1	4-5 days	Caustic aristol argyrol	5 weeks	Negative	U. M.	One	9 days	No	None	Exposed sore
7	1	Indefinite	None	3 weeks	Negative	Chancre	One	5 days	No	None	Hard chancre developed at site of sore
8	4	4 days	Antiseptic wash	3 weeks	Not made	U. M.	One	5 days	No	None	
9	1	10-12 days	None	12 days	Negative	U. M. E.	One	5 days	No	None	
10	1	Indefinite	None	4 days	Negative	U. M.	One	4 days	No	None	
11	2	Indefinite	None	17 days	Negative	U. M. M.	Three	16 days	Yes, not opened	Negative	
12	1	Indefinite	Salve	7 days	Negative	Chancre	Two	14 days, not healed	No	Positive	
13	2	2 weeks	Caustic and calomel	2 weeks	Negative	U. M. E.	One	6 days	No	None	Circumcised 2 days after healing: ½ circumference became chancroidal, healed in 2 weeks
14	1	Indefinite	None	3 days	Negative	U. M.	One	5 days	No	None	
15	1	10 days	Dusting pow.	7 days	Refused	U. M. E.	One	6 days	No	Refused	
16	1	Indefinite	None	8 days	Negative	U. M. M.	One	7 days	No	None	
17	3	9 days	None	1 day	Negative	U. M.	One	6 days	No	+++	Hard chancre developed at site of sore
18	1	Indefinite	None	10 days	Negative	U. M.	One	5 days	No	None	
19	1	4-5 days	None	7 days	Negative	U. M. M.	Two	14 days	Yes	None	Bubo incised, healed slowly; applied $CuSO_4$ and violet ray, healed rapidly
20	4	9-10 days	Calomel	3 weeks	Not made	U. M. E.	Two	9 days	Yes, subsided	Refused	
21	3	2-3 days	Antiseptic	6 weeks	Refused	U. M. P.	Three	25 days	No	Refused	Phagoclinic case; patient very uncleanly
22	1	12-13	Antiseptic	8 days	Negative	U. M. M.	One	5 days	No	None	
23	2	Indefinite	None	2 weeks	Negative	U. M.	One	10 days nearly	Yes	None	
24	1	Indefinite	?	2 months	No	U. M.	Two	5 days nearly	Yes, incised	Negative	Nearly healed on 5th day; not seen afterward
25	2	Indefinite	None	10 days	Negative	U. M.	One	10 days	No	++++ (2 wks. later)	
26	3	2 weeks	Ointment	4 weeks	None	U. M.	Two	5 days	No	None	
27	2	5 days	None	3-4 days	None	U. M.	One	5 days	No	None	
28	1	2 weeks	?	5 days	Negative	U. M. M.	One	6 days	No	None	
29	1	10 days	None	2 days	Negative	?	One	6 days	No	.....	Has been sent for Wassermann test; think there is a hard chancre at meatus
30	3	4 days	Calomel	14 days	Negative	U. M. E.	Two	7 days	No	None	
31	1	5 days	None	3 days	Negative	U. M.	One	4 days	No	None	
32	2	Indefinite	None	11 days	Negative	U. M.	Two	7 days	No	None	
33	5	Indefinite	Calomel	8 days	Negative	U. M.	Two	9 days	Yes, subsided	None	
34	1	Indefinite	Aristol	2 weeks	Negative	?	Three	12 days, not healed	No	Positive	

* Names in diagnosis column: U. M., Ulcus molle; U. M. M., Ulcus molle miliare; U. M. E., Ulcus molle elevatum; U. M. P., Ulcus molle phagedenicum.

or four minutes and then sponged off. On the dry sore a light dusting powder, calomel or a morphin-narcotin mixture is used, and one or two thicknesses of gauze, moistened with black wash or tap water, are applied and the foreskin drawn forward over the whole. This is changed two or three times daily; and every second day, unless granulation is progressing satisfactorily, a 10 per cent. solution of copper sulphate is applied. The majority of chancroid ulcers do well under this treatment, but from 15 to 20 per cent. tend either to persist many weeks, or to grow gradually larger and deeper in spite of treatment. The direct cause is the failure to sterilize the wound.

Regardless of the appearance, duration or previous treatment of a venereal sore before it is destroyed, it is always examined for spirochetes.

If antiseptics have been used, it is our custom to apply a moist dressing of cotton wet with tap water for from twenty-four to seventy-two hours, during which time two or three microscopic examinations are made. If no treatment has been previously given, the examination and destruction of the sore is accomplished at the first visit.

A small pledget of cotton is wet with 10 to 20 per cent. solution of cocain and applied to each lesion. After four or five minutes the field is carefully

cleansed with soap and water and dried. Each lesion is then thoroughly wiped out with a cotton wound applicator until bleeding ensues. This is arrested by sponging, and when only serum exudes from the wound, this is collected for examination by dark field or stain, as may be the choice of the operator.

A 25 per cent. solution of copper sulphate in distilled water is now applied to the sore, and the short high frequency spark from a rather fine-pointed vacuum electrode is applied directly to the sore for one to three minutes, depending on the extent of the ulceration. Especial care is exercised in carrying the point of the electrode well down into any fissure or undermined edge, and the area of application should extend over the edge of the sore about one sixteenth inch into the doubtfully healthy area.

The current is not turned off until every crack and crevice has been thoroughly treated and the surface of the sore is changed to a dark greenish gray. It is then wiped dry and some antiseptic powder is lightly applied to the entire mucous surface of the preputial cavity. If the sore is exposed, it should be covered with a thick moist dressing, for which any very dilute antiseptic solution may be used, as a 1:10,000 or 1:20,000 mercuric chlorid solution; or even tap water answers nicely in most cases. This should be changed once or twice daily, and must not be allowed to stick.

The patient is instructed to return in two days, and, if the work has been carefully done, the wound will present a perfectly healthy granulation that will go on to complete healing in a few days. If the sore does not look clean, the application is repeated at the second visit. The patient returns each second day. If the original sore was large, or if a small sore does not seem to be closing rapidly, we have made it a practice to apply, at each visit, either a 10 per cent. copper sulphate or a 5 per cent. silver nitrate solution. We do not hesitate to repeat the original cauterization at any time we have reason to think the chancroidal infection is not completely eliminated.

The complete success of this, as of any other method, is dependent on careful, thorough work. There is more danger of too little cauterization than of too much, and thorough cleansing at the time the sore is destroyed must not be forgotten. Again, the after-care, especially with ulcus molle outside the preputial cavity, and with ulcus molle miliare, is of the utmost importance. If one fails to carry the electrode to the bottom of the cavernous ulcer, then one is lost. It heals over the surface, and in two or three days breaks out anew, larger and deeper than before.

If the dressing on an exposed surface is not changed once daily, and moistened at least three or four times, in many cases one will not succeed.

The accompanying table gives our results in all cases in which data are complete. A number of patients failed to return after the first treatment. Several of these have been seen later, and reported uneventful healing in a few days. In no case have we been able to record a failure.

Three or four cases in which the lesions did not heal well or recurred later developed a positive Wassermann reaction, notwithstanding the fact that careful microscopic examination was negative for spirochetes.

To be thoroughly scientific, one should always be able to explain and prove the modus operandi of any treatment presented to the profession. Unfortunately, we are not able to do just that, but we believe that by this combined treatment we have been able to produce deep sterilization of the chancroid ulcer with a certainty not heretofore effected. This has been done with great satisfaction to ourselves and our patients. We present the method with the hope that our friends may find in its application the same assurance of success that we enjoy.

1212 Kresge Building.

ABSTRACT OF DISCUSSION

DR. NOAH E. ARONSTAM, Detroit: The method of procedure in the treatment of chancroids as outlined by the essayists is neither novel nor unique. Old French authors on the subject as far back as 1880 advocated the use of strong solutions of copper sulphate. In the Allgemeine Krankenhaus of Vienna the same method was pursued twenty-five years ago. In the issue of 1902 of the *Russkiy Vratch* a similar method was mentioned.

The use of the high frequency tube on the lesions after the preliminary cauterization with copper sulphate is somewhat obscure and questionable to me. A pellicle is formed after such procedure on the sore, and hence the violet ray is unable to diffuse or penetrate and thus sterilize the lesion. My experience has been that it requires an untreated and unmolested lesion in order that the ray may prove efficacious.

As regards the varieties of chancroids, I am in the habit of classifying them as follows: (1) simple erosive chancroid; (2) miliary ulcer, or ulcus erosive miliare; (3) serpiginous form; (4) phagedenic; (5) pultaceous or necrotic; (6) gangrenous.

In the last four varieties the prognosis is unfavorable; the lesions prove very obstinate. Even in the simple variety a definite prognosis cannot always be ventured, and we should be guarded in expressing a decided opinion. There is no uniform method by which we can accomplish results. In my hands equal parts of phenol and iodin have proved useful. I refrain from using such caustic agents as strong solutions of silver nitrate, nitric acid and the methods promulgated by the authors for fear of inducing an indurated condition which may closely resemble the primary lesion of syphilis and thus mask and obscure the clinical features of the sore.

I wish to lay stress on the employment of bacterins in chancroidal lesions. I use a mixed staphylococcus vaccine, as frequently the chancroid harbors a mixed infection, superimposed on its causative agent, the Ducrey-Unna bacillus. I also desire to object to the term "chancroid." It should be changed to infective venereal ulcer, and the inadequate and antiquated term "chancroid" should be abolished.

DR. H. L. KRETSCHMER, Chicago: The results that Dr. Robbins obtained with his combination treatment are better than the results we have obtained. We have been using the copper in 25 per cent. solution, preceded by 95 per cent. phenol, then applying the wet dressings just as he has done; that has given us very satisfactory results. I should like to ask Dr. Robbins how much of his good results he attributes to the action of the caustics and how much to the action of the high frequency current. I should like to ask whether or not in any of the cases of multiple chancroids he cauterized some of the lesions with copper and used high frequency, and treated some with the high frequency alone.

DR. CHARLES W. BETHUNE, Buffalo: I should like to ask Dr. Robbins whether he obtained his high frequency current from the regular, standard high frequency machine which we use in fulguration, or from one of these small machines costing about $35. Is the latter sufficient to cause the penetration of the copper sulphate?

Dr. Robbins mentioned the use of mercurials in the treatment of chancroids. One can never tell absolutely that there is not a double infection with the spirochete. In that case one may mask the secondaries, possibly the general adenitis, and very probably the Wassermann reaction.

DR. B. S. BARRINGER, New York: Dr. Livermore of Memphis, Tenn., sometime ago suggested that an ounce of argyrol

crystals would cure all the chancroids in the United States, if properly applied. That was a rather vigorous statement, but we at Bellevue started to use the argyrol treatment. The ideal way that we found to use it was to cocainize the chancroid first and put argyrol crystals directly on it. Our results have been so good that we have practically given up every other form of treatment. We are rather inclined to agree with the gentleman who first published this statement.

DR. LELAND J. BOOGHER, St. Louis: This subject has been the *bête noire* of all of us. I have seen some cases that I did not believe any form of treatment would touch, and I remember one or two cases that ran on for a year or two until the tissue was almost entirely denuded. I have used crystals of argyrol and also another proprietary silver preparation. There are some cases in which I would like very much to have Dr. Robbins try his form of treatment. I have one such patient now, whom I have been treating about three months, and he is getting worse every day.

DR. G. G. SMITH, Boston: No one has yet mentioned the use of the actual cautery for very severe forms of chancroid, and I should like to mention it as having been in our hands a real weapon of reliance in cases which were not to be cured by applications of phenol, nitric acid and other caustics. We have had to anesthetize the patient either locally or by gas, and then apply the actual cautery until the whole thing is burned out to a dry crisp. I have seen some chancroids which resisted one treatment of that kind, but a second treatment always cured them.

DR. IRWIN E. COLGIN, Waco, Texas: I have used a high frequency spark, using an electrode which approached the roentgen ray, and have had some very good results, but I think Dr. Robbins' method is superior to this, due to the fact that the copper in 25 per cent. solution will act as a conductor. The ordinary effleuve from a high frequency electrode, using a long spark, cauterizes the surface, and I do not doubt that using an electrode in conjunction with the copper sulphate in 25 per cent. solution would cause the current to be carried to a greater depth and would sterilize deeper than if the electrode were used by itself.

DR. F. W. ROBBINS, Detroit: In this class of cases we have tried copper sulphate, Dr. Morton's use of zinc chlorid, high frequency—all these various things alone, without unusual results. Is there any one here who has not seen a chronic ulcer of the inguinal region, after a bubo has been opened, that has run on and on, the patients looking tuberculous and the condition continuing in spite of everything done? One such patient was in the hospital and in bed from four to six weeks. We used argyrol crystals and tried to cleanse that wound as thoroughly as possible, but without success as far as results were concerned; the patient simply remained in the same condition with this miserable sore that would not heal. Within a week after combined treatment was instituted the ulcer had healed and he was well.

Dr. Aronstam mentions the former use of copper; that is all right; but whether they used any strong metalic caustic in connection with the high frequency I very much doubt, because in those days they had no knowledge of high frequency or violet rays.

As to the machine from which we obtained this current, I use the Wappler larger battery; Dr. Seabury uses the smaller portable one. One is just as effectual as the other.

Insurance Company Studies Automobile Fatalities.—The Metropolitan Life Insurance Company has made a statistical study of the death rate from automobile accidents which discloses the fact that the mortality rate from automobile accidents has more than trebled since 1911. In 1911 the death rate from this cause was 2.3 per hundred thousand; in 1916, it increased to 7.4. The rate for 1916 shows an increase of more than 37 per cent. over that of 1915. Nearly one third of those killed are children under 10 years of age. Another condition developed by this study is the fact that so far as the industrial population is concerned, more deaths are caused by automobiles than by surface cars, subway trains, elevated trains, bicycles and horse-drawn vehicles combined.

A MORE DELICATE WASSERMANN REACTION DEPENDING ON THE USE OF INCREASED QUANTITIES OF BLOOD SERUM*

P. T. BOHAN, M.D.
AND
L. A. LYNCH, M.D.
KANSAS CITY, MO.

This paper is based on observations made on 200 patients examined serologically for evidences of syphilis. The work done has covered a period of one and one-half years. The material was obtained from the medical wards of St. Margaret's Hospital. The data given represent our effort to develop a Wassermann technic which would check up in a larger percentage of cases with the clinical diagnosis of syphilis and which would enable us to attach some significance to the negative Wassermann reaction.

Our method consists essentially in the use of graded increasing amounts of blood serum and spinal fluid, each serum being tested in the following amounts: 0.1 c.c., 0.3 c.c., 0.5 c.c. and 1 c.c., while amounts of spinal fluid as high as 10 c.c. are used in a single test.

Our investigation shows that as much as 1 c.c. of serum may be safely used, and that a negative reaction with 0.1 or 0.2 c.c. of serum is of little or no value in excluding syphilis in the latent or inactive stage, such as locomotor ataxia. In the cases here reported, which required the use of increased amounts of serum to obtain a positive reaction, the diagnosis of syphilis could be made by other means, such as a history of chancre, the clinical findings and by tests of the spinal fluid. In fact, in not a single case that gave a positive reaction only when as much as 1 c.c. was used did we fail to obtain positive findings in the spinal fluid, such as a positive globulin test, a typical colloidal gold chlorid test, as well as a positive Wassermann reaction when a sufficient amount of fluid was used. Seldom, however, was it necessary to use to exceed 5 c.c. of spinal fluid.

Lange,[1] in 1912, was using as high as 10 c.c. of spinal fluid for a single reaction, but he was not using large amounts of blood serum. Kromayer and Trinchese[2] were using as high as 0.4 c.c. of blood serum in 1913, obtaining more specific results than with the smaller amounts.

We have tested over 2,500 blood serums in amounts as high as 1 c.c. This report is made on but 200, which we checked up by a complete examination of the spinal fluid, a complete clinical history and a careful physical examination.

Of the 200 cases, 143 were known syphilitic. There were forty-one cases of paresis, forty-eight of tabes dorsalis, twenty-nine of cerebrospinal syphilis, seven of congenital syphilis and eighteen cases of syphilitic heart involvement. Eighty-three of these gave complete inhibition of hemolysis with 0.1 c.c. of blood serum; twenty-two gave partial inhibition when 0.3 or 0.5 c.c. was used. In fifteen there was no inhibition until done with 0.5 c.c., and in eighteen cases it was necessary to use 1 c.c. before any degree of inhibition was noted. Six blood serums were negative when 1

* Read before the Section on Pathology and Physiology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Lange: Berl. klin. Wchnschr., 1912.
2. Kromayer and Trinchese: Med. Klin., 1912, **8**, 404.

c.c. was used. Five of these were long standing inactive cases of tabes, the other being a case of congenital syphilis.

It is to be noted that if only the ordinary small amounts of serum had been used, a total of but 59 per cent. positive would have been obtained; while, when 0.5 c.c. was used, the percentage was increased to 74 per cent., and if an amount as high as 1 c.c. was employed, 96 per cent. gave fixation of complement. This is a degree of specificity which has not heretofore been approached.

Of the 200 cases, forty-seven gave no suspicious history, and there were no physical findings suggesting syphilis. None of these gave any inhibition of hemolysis with 0.1 c.c. of serum; two gave a ++ reaction with 0.3 c.c., and ++++ when 0.5 c.c. those instances that manifested any activity of the process. Also a positive spinal fluid Wassermann test was obtained in all the instances in which the blood was positive with increased amount, in some cases as much as 10 c.c. or more of spinal fluid being required. It is often possible and practical to determine the minimal amount of spinal fluid necessary to use in obtaining a positive Wassermann reaction by the intensity of the colloidal gold chlorid test and the amount of globulin present.

The complement fixation test is essentially a quantitative one, probably dependent on lipoid substances resulting from antibody formation. The concentration of these substances depends on the activity of the process; hence the frequency of the negative reaction in those cases of long standing in which scar tissue

REACTIONS WHEN INCREASING AMOUNTS OF BLOOD SERUM WERE USED

	Quantity of Serum Used				Remarks
	0.1 c.c.	0.3 c.c.	0.5 c.c.	1 c.c.	
Congenital syphilis, 7 cases:					
1 case	++++	++	++++		Examination of spinal fluid showed positive globulin, typical gold curve and positive spinal fluid Wassermann in all cases.
1 case	++	++	++	++++	In two cases 5 c.c. of spinal fluid had to be used to obtain a ++++ reaction. In four cases cell count was below ten to the cubic millimeter. In only one case was the cell count above twenty-five.
3 cases	Negative	Negative	++	++++	
1 case	Negative	Negative	++	++++	
1 case	Negative	Negative	Negative	Negative	
Tabes dorsalis, 48 cases:					
24 cases	++++				Diagnosis of tabes made by clinical manifestations and physical findings, increased globulin, typical gold and positive spinal fluid Wassermann in all cases. In 34 cases spinal fluid Wassermann was positive with 0.5 c.c. Largest amount required 5 c.c. In 22 cases cell count was below 10 to c.mm. Only 4 cases had counts above 50 to c.mm.
10 cases	++	++	++++		
3 cases	Negative	+++	++++		
1 case	Negative	Negative	+++	++++	
5 cases	Negative	Negative	Negative	++++	
5 cases	Negative	Negative	Negative	Negative	
Paresis, 41 cases:					
34 cases	++++				Clinical diagnosis made in all cases. In thirty, spinal fluid Wassermann was positive with 0.5 c.c. In only 6 cases was it necessary to use more than 1 c.c. Paretic curve with all cases and an increase in globulin. In but 4 cases was the cell count below 25 to c.mm.; in 12 it was above 100 c.mm.
2 cases	++	++	++++		
1 case	Negative	Negative	++	++++	
Cases with heart involvement, 18 cases:					
8 cases	++++				All were cases of aortic insufficiency. All gave precipitation of colloidal gold in syphilitic curve with increased globulin, and in 5 there was no increased cell count.
4 cases	++	++++			
1 case	Negative	Negative	++++		
2 cases	Negative	Negative	++	++++	
3 cases	Negative	Negative	Negative	++++	
Cerebrospinal syphilis, 29 cases:					
10 cases	++++				Diagnosis made by clinical manifestations and physical findings. Positive spinal fluid Wassermann in all. In fourteen cases it required more than 1 c.c. The colloidal gold test was positive in all cases, with increase of globulin. The cell count was below 10 to the c.mm. in 8 cases. It was above 75 to the c.mm. in but 4 cases.
1 case	+++	+++	++++		
3 cases	++	++	++++		
1 case	Negative	+++	++++		
2 cases	Negative	Negative	++++		
2 cases	Negative	Negative	++	++++	
3 cases	Negative	Negative	Negative	++++	
1 case	Negative	Negative	Negative	+++	
6 cases	Negative	Negative	Negative	++	

was used. These were, clinically speaking, cases of chronic nephritis. Three gave complete inhibition of hemolysis with 0.5 c.c. One of these patients had auricular fibrillation, one had typhoid fever, and the other nephritis. Two gave a partial inhibition with 1 c.c.; one was a patient with multiple sclerosis, and the other was a pneumonia patient. One gave complete fixation of complement with 1 c.c., negative in less amount, this being a case of multiple sclerosis. There were, of course, cases of latent syphilis.

It is of especial interest to note that in those patients in whom we obtained a positive complement fixation reaction with the use of increased amounts of serum, both in the group of known syphilitics and those presenting no evidences of syphilis, a precipitation of the gold has always been obtained in the tubes characteristic of the syphilitic curve, along with a demonstrated increase in globulin and an increased cell count in is the immediate cause of the symptoms and the spirochetes to a certain degree inactive, as in tabes dorsalis. It is in this group of cases that, by the use of increased amounts of serum, we are able to obtain a larger percentage of positive results than we would with 0.1 or 0.2 c.c. of serum, which contains an insufficient amount of reacting bodies.

This technic indicates a more definite guide in the control of treatment, a graded increasing amount of serum being required to produce fixation of complement, depending on the intensity of the treatment. We have, of course, those cases of the latent and tertiary states in which prolonged, intensive treatment has failed to diminish the degree of complement fixation; however, it is the rule that cases under treatment become negative in the smaller amounts of serum first, requiring much longer courses to become negative when 1 c.c. is used.

Concerning the significance of a serum becoming negative with 1 c.c. of serum during the course of treatment, we can only say that this means much more than when only the ordinary small amount is used.

TECHNIC

At least 10 c.c. of blood should be obtained and as much spinal fluid as can be taken with safety, from 10 to 15 c.c., if possible. After the blood is centrifuged and the clear serum inactivated, it is transferred to a small centrifuge tube to which is added 0.1 c.c. of pure undiluted thoroughly washed sheep corpuscles, shaken and allowed to stand for one-half hour in the ice chest. The serum is again centrifuged, throwing down the sheep corpuscles, and the clear serum pipetted off ready for the test. In this way natural antisheep hemolysin is removed by absorption.

A titration for the proper unit of complement is made with a 2.5 per cent. suspension of sheep corpuscles, a known titer of immune rabbit serum and a 1 : 10 dilution of fresh guinea-pig serum. This is done in the presence of the different amounts of serum or spinal fluid to be used in the test: in the case of blood serum, 0.1, 0.3, 0.5 and 1 c.c. The serum is taken from a known negative case. When working with spinal fluid, the titration is done for amounts as high as 10 c.c. The spinal fluid being hypotonic for sheep cells, it becomes necessary to add sufficient sodium chlorid to make an isotonic solution.

The proper units of complement having been determined, the tests are set up, each serum being run in the amounts mentioned, namely, 0.1, 0.3, 0.5 and 1 c.c. Two units of complement are used for each different amount of serum, and each individual amount is controlled for anticomplementary properties. An alcoholic extract of human heart muscle, to which was added 0.2 per cent. of cholesterin, was used as antigen in this technic. Sufficient 0.9 per cent. salt solution is added to each tube, so that when the test is complete there will be 4 c.c. in each, for it is for this total amount that the titration for the complement unit is made.

One and one-half hours in a water bath at 37 C. is allowed for the fixation of complement, after which the unit of amboceptor and the sheep cells are added, and the final readings are made at one-half hour intervals for two hours. It is to be noted that with the larger amounts of serum the end-reaction is slower in taking place, but with an active amboceptor the final reading can safely be made at the end of two hours.

CONCLUSIONS

1. With larger quantities of serum a higher percentage of positive reactions is obtained.

2. With this technic, if the serum is fresh, 1 c.c. is not more anticomplementary than smaller quantities.

3. Normal serum does not cause complement fixation when 1 c.c. is used.

4. Our investigations corroborate the statement by Lange that in nonsyphilitic cases negative reactions are obtained in the spinal fluid with 10 c.c.

5. A negative reaction with an increased quantity of serum does not positively exclude latent syphilis. In 4 per cent. of known syphilitics there was no inhibition of hemolysis when 1 c.c. of serum was used.

6. A Wassermann test made with graded quantities of serum is not only an index of the activity of the syphilitic process, but is of value in indicating the progress of the case under treatment.

923 Rialto Building.

ABSTRACT OF DISCUSSION

Dr. B. Gruskin, Chicago: No doubt much significance should be placed on any modification in the technic of serologic tests, and any change in the technic that will lead to clearer and better understanding should be encouraged; but there is a limit to this and one must be sure before adopting a new technic whether this is not misleading to a certain extent. From what I gathered from the paper I see nothing different than the original complement fixation test, and the reason the laboratory men decided to use small quantities is because a lot of negative cases had proved positive when large quantities were used. I do not doubt the essayists' statements, but I know that I have tried the same technic in using large quantities and I have obtained slightly positive results in negative serums, due to the fact that large quantities of serums will bind complement to a certain extent. In conclusion I wish to say that unless there are clinical manifestations, or when the spinal fluid shows a high cell count, one must be very careful in pronouncing a case positive when large quantities of serum are used.

Dr. J. W. Smith, Jr., New York: What was the amount of serum used in the serum control?

Dr. S. S. Hindman, Toledo, Ohio: In these Wassermann tests with large quantities of serum, was the active serum used, making use of the native complement? I did not understand this point.

Dr. James Ewing, New York: It is interesting to note the constant appearance of new serologic tests for syphilis. I have often wondered why some one did not revive the old Justus test, which consisted in a sudden drop in the hemoglobin following a mercurial inunction. This test enjoyed considerable vogue at one time. The great limitation to the significance of all these tests is that they are not specific. So long as their application is restricted to clinical medicine they may be of much service, but when the attempt is made to establish new rules regarding syphilitic infection and immunity or new conditions as to syphilitic origin, they must be rated as unsafe guides. Not long since it was announced, on the basis of Wassermann reactions, that syphilis insontium could be transferred to the third generation. In order to avoid serious errors I think pathologists in general feel that there is only one way of positively establishing the syphilitic nature of a lesion, and that is by the finding of *Spirochaetae pallidae* in the tissues.

Dr. Lloyd D. Felton, Baltimore: Instead of using a great amount of serum I have decreased the dose of complement. The Wassermann reaction is a quantitative fixation of the complement, so that the greater the amount of the complement used the greater the amount of the antibody needed to give a positive reaction. In the use of the method suggested by Bronfenbrenner—hypersensitive cells, these cells hypersensitized by 5 to 8 amboceptor units—one is able to reduce the dose of the complement to 0.01 c.c. of a 1 : 10 complement. This technic, in my mind, is equivalent to using a large amount of serum. The objection that this technic would make the test too sensitive cannot be sustained. It is not a question of giving too many positive reactions, but the danger of getting a negative result in serum which really is from a case of syphilis. As a rule it is easier to rule out a nonspecific positive reaction from a clinically negative case and much safer than to prove an individual has syphilis when the Wassermann reaction is negative.

Dr. L. A. Lynch, Kansas City, Mo.: From the beginning of this work we have been particularly watchful for nonspecific reactions. Although the technic described has been used with good results on over 1,000 blood serums and spinal fluids, we have included in this report only 200 cases, which have been checked up by a complete examination of the spinal fluid, physical findings and clinical history. We can safely say that when one is working with a hemolytic system with which he is perfectly acquainted, 1 c.c. of normal blood serum does not cause fixation of complement. The serum and spinal fluid are controlled in each of the different amounts used; also the serum is always inactivated. Both complement and amboceptor are titrated for each different

amount of serum and spinal fluid used. Observing the necessary precautions, one can safely use larger amounts of blood serum and spinal fluid, obtaining a much larger percentage of positive results in true cases of syphilis.

THE ETIOLOGY AND DEVELOPMENT OF NEPHRITIS *

WILLIAM OPHÜLS, M.D.
SAN FRANCISCO

Before entering on a discussion of my subject I wish to state that I have included in the scope of this paper only cases in which the renal tissue showed well marked diffuse hematogenous inflammatory lesions. I have excluded all focal lesions of lesser importance, whether abortive forms of true nephritis, as the embolic focal nephritis described by Löhlein[1] and Baehr,[2] or other focal conditions which are coincident with vascular disease and in which the disease of the blood vessels evidently constitutes the more important feature.

The cases here spoken of are those which may be designated as cases of diffuse glomerulonephritis, because the inflammatory lesions of the glomeruli play an important part in this disease and form the one connecting link in an often bewildering multiplicity of other developments. The more I study the situation both from an etiologic and a broad anatomic point of view, the more I become impressed with the more general applicability of this old term of glomerulonephritis, not only to those cases that have been commonly so designated (chronic parenchymatous nephritis, secondary contracted kidney), but also to many of those that used to be attributed to primary changes in the interstitial tissue (chronic interstitial nephritis, primary contracted kidney), or to primary changes in the blood vessels (arteriosclerotic nephritis). In this light, these various types of nephritis become mere different manifestations of one and the same disease. The differences that have been so carefully studied by the pathologic anatomists and have given rise to our complex, and, it must be acknowledged, often confusing nomenclature, naturally remain, but as purely descriptive subdivisions. They should be relegated to that point of relative importance to which they may still lay claim, and should not be permitted to cloud the real picture by the introduction of a mass of perhaps interesting but evidently subsidiary detail.

The idea that bacteria might be concerned in the production of nephritis may be said to date back almost as far as bacteriology itself. It found its simplest expression in an inaugural dissertation of Ernst,[3] who worked under Klebs in Zürich, in which it is stated that true nephritis, being a genuine inflammation, was probably due to infectious agents. The support given this theory by Ernst's actual observations naturally was far from adequate. He reported two cases of acute nephritis in pneumonia in which he demonstrated bacteria in microscopic sections of the kidneys and similar findings in an instance of chronic parenchymatous nephritis. It may be stated here that the more careful histologic examinations of a later date have failed to furnish additional proof along these lines except in rare, unusually severe cases, and bacteria, if they were present in sections, were observed not so much in the tissues as in the blood contained in the blood vessels as a part of a general septicemia.

Even before Ernst, in 1880, Kannenberg[4] had called attention to the fact that pathogenic bacteria might be encountered in the urine in cases of acute infectious diseases, "especially when they were associated with nephritis." Kannenberg also seems to have been among the first to emphasize the fact that tonsillitis is a very common cause of nephritis, and he says that in three such cases he found micrococci in close connection with the casts, with the epithelial cells and free in the urine, an observation which recently has been reported as somewhat of a novelty. Ten years later, Agnes Blum,[5] working under Eichhorst in Switzerland, made a careful study of the relation of various acute infections to nephritis, mostly of the acute type, but she expresses the opinion that infections may perhaps be more frequently the cause of chronic diffuse nephritis than was then commonly believed, and she mentions a case which clinically appeared to be one of chronic interstitial nephritis following repeated attacks of tonsillitis, and mentions a similar case, anatomically confirmed, following rheumatism and endocarditis.

In the same year (1890) some interesting experimental work was done by Mannaberg[6] with streptococci isolated from the urine of patients with acute nephritis of obscure origin. By means of intravenous injections of the cultures so obtained, he reproduced severe acute nephritis in dogs and in rabbits. Mannaberg had an idea that these streptococci were specific organisms, which affected the kidneys electively. He noticed also two important points: first, that although the streptococci produced the nephritis and appeared in the urine, they did not proliferate in the kidneys, and second, that if the nephritis became chronic, the streptococci were apt to disappear from the urine. Mannaberg's investigations and experiments were performed carefully with good modern technic and therefore deserve considerable attention.

A few years later (1894) Pernice and Scagliosi,[7] two Italian investigators, described the acute lesions which they observed in the kidneys of dogs, rabbits and guinea-pigs that had been inoculated either subcutaneously or intravenously with various bacteria (*Bacillus anthracis, Bacillus pyocyaneus, Bacillus prodigiosus and Staphylococcus pyogenes-aureus*), and came to the conclusion that their observations furnished the experimental proof of the existence of a form of glomerulonephritis caused by bacteria. Since inoculations of the toxins of these bacteria had much less effect on the kidneys, they concluded that the bacteria themselves played an important part in the production of the renal lesions. There was nothing specific about these experimental lesions, because they were produced similarly by different types of bacteria, among them even a nonpathogenic organism (*Bacillus prodigiosus*).

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* Read before the Oregon State Medical Association, Portland, Ore., June 28, 1917.

* From the Pathological Laboratory of the Leland Stanford Junior University School of Medicine.

1. Löhlein: Ueber hemorrhagische Nierenaffektionen bei chronischer ulceröser Endocarditis (Embolische nichteitrige Herdnephritis), Med. Klin., 1910, **6**, 375.

2. Baehr: Glomerular Lesions in Subacute Bacterial Endocarditis, Jour. Exper. Med., 1912, **15**, 330; Am. Jour. Med. Sc., 1912, **144**, 327.

3. Ernst: Zur Aetiologie der Nephritis, Inaug. Diss., Zurich, 1884.

4. Kannenberg: Ueber Nephritis bei acuten Infektionskrankheiten, Ztschr. f. klin. Med., 1880, **1**, 506.

5. Blum, Agnes: Ueber die Aetiologie der Nephritis, Deutsch. Arch. f. klin. Med., 1890, **47**, 193.

6. Mannaberg: Zur Aetiologie des Morbus Brightii acutus nebst Bemerkungen über experimentelle bakterische Endocarditis, Ztschr. f. klin. Med., 1890, **18**, 223.

7. Pernice and Scagliosi: Beitrag zur Aetiologie der Nephritis (Experimentelle Nephritis von bakterischem Ursprung), Virchows Arch. f. path. Anat., 1894, **138**, 521.

In his careful work on acute diffuse nephritis, Councilman[8] mentions the fact that in eighteen out of twenty-eight cases of acute glomerulonephritis, bacterial infection was found either in the kidneys or in other parts of the body. Fourteen of these cases were evidently streptococcus infections, and in eleven of them there was present endocarditis and general septicemia. Councilman states that bacteriologic examination did not reveal anything suggestive in his cases of subacute and chronic glomerulonephritis.

It is to be regretted that Asch's[9] interesting monograph on the influence of bacterial toxins on the kidneys is not accompanied by illustrations, because he seems to have obtained some remarkable results by the injection of dead pure cultures of bacteria into the abdominal aorta near the openings of the renal arteries. He introduced a catheter into the abdominal aorta from below through the femoral artery with the idea of injecting the bacteria directly into the kidneys by way of the renal arteries. He worked largely with organisms of the colon group.

The same idea has recently been utilized by Winternitz and Quinby[10] of Johns Hopkins, who have injected living cultures of *Bacillus bronchisepticus* directly into the renal artery of dogs with the following results: Three groups of experiments were distinguished: (1) those in which no demonstrable general infection occurs; the kidney, however, shows immediate and acute inflammatory lesions which rapidly subside and result in focal scars associated with intermittent albuminuria and cylindruria; (2) those which die acutely with fulminating renal lesion and an acute general infection; (3) those in which there was definite evidence of general infection as well as renal involvement. The first (the general infection) subsided, while the kidney changes progressed and led rapidly to functional impairment to such an extent that the organ was unable to maintain its efficiency after the other kidney had been removed. As shown in the illustrations which accompany the article, the lesions are those of acute, subacute and chronic glomerulonephritis with congestion and enlargement of the kidney in the acute cases and fibrosis and shrinkage in the chronic cases. The advantage in working on one kidney in this way is that one may produce severe lesions without necessarily killing the animal, and may then test the functional capacity of the injured kidney after it has reached the chronic stage, by removing the healthy kidney.

That it is not necessary, however, to inject the bacteria into the arterial blood stream in order to obtain the characteristic lesions in the glomeruli had already been shown by Le Count and Jackson, in 1914. These investigators injected rabbits intravenously with streptococci, and, as their photomicrographs show, produced very characteristic acute lesions in the glomeruli of the kidneys of some of their animals. Their results have been confirmed and amplified in our own laboratory.

Dr. E. W. Smith, under my direction, made repeated intravenous injections in rabbits of streptococci obtained from various sources, in order to study the more chronic changes which might arise in the various organs of these animals. Among forty-eight rabbits, fourteen developed renal lesions, and in seven of them the lesions were well marked and extensive. These seven rabbits lived from thirty-two to 142 days. That certain streptococci seem to have a fairly definite affinity for the kidneys seems to be shown by the fact that two pairs of these rabbits had been treated with the same streptococcus, one pair with a nonhemolytic diplostreptococcus from the tonsils of a case of acute duodenal ulcer, and another pair with a similar organism from an acute gastric ulcer. That this affinity, however, is not very strong is shown by the fact that the lesions in the other three cases were due to different streptococci, and that in other rabbits the same streptococci did not produce any renal lesions. None of the streptococci which caused severe renal lesions in the rabbits were obtained from cases of human nephritis, although we used several such in the experiments. The lesions produced in the glomeruli were very characteristic of acute and subacute glomerulitis, as shown by the accompanying illustrations. The lesions were quite diffuse, so much so that in some of the specimens the great majority of the glomeruli were involved. The tubules contained blood and casts. The epithelium exhibited granular and hydropic, more rarely fatty degeneration. Some of the rabbits presented also well marked focal lesions in the interstitial tissue which, however, were probably due to spontaneous nephritis. Otherwise a moderate round-cell infiltration about the blood vessels was all that could be observed even in the animal which lived 142 days and received eleven inoculations. Three of the seven animals had developed endocarditis, and in three others the condition in the kidneys was associated with amyloid degeneration which is apt to follow repeated intravenous injections of all sorts of bacteria. The arteries in the kidneys and elsewhere were normal in all cases.

These experimental results obtained by us and others seem to prove that the suggestion made by me some years ago on the basis of my findings on human material, that the glomerular lesions in glomerulonephritis are probably embolic and due to the rapid lysis of the bacteria within the vascular loops of the glomeruli, is probably true. The type of bacteria concerned does not seem to be of much importance, provided they possess certain endotoxins which become liberated on lysis. Asch's experiments seem to show that the same results may be obtained with dead organisms as with living bacteria. In the human being we have reason to believe that streptococci, colon bacilli, influenza bacilli and probably other bacteria may act in this way, although streptococci seem to be by far the most common organisms concerned in the causation of human nephritis.

The definite knowledge of the importance of streptococcic infections in acute and subacute glomerulonephritis and much of our modern knowledge on nephritis we owe to Löhlein's[11] careful anatomic and clinical investigations. His observations have been abundantly confirmed since, and are thoroughly accepted in Volhardt and Fahr's[12] important monograph on nephritis. It has also been gradually recognized that the most dangerous forms of nephritis are those associated with streptococcic infections of the tonsil, in which cases the persistence and recrudes-

8. Councilman: Anatomical and Bacteriological Study of Acute Diffuse Nephritis, Am. Jour. Med. Sc., 1897, **114**, 23.

9. Asch: Ueber den Einfluss der bakteriellen Stoffwechselprodukte auf die Niere, Strassburg, 1904.

10. Winternitz and Quinby: Experimental Nephropathy in the Dog. Lesions Produced by Injection of the Bacillus Bronchisepticus in the Renal Artery, Jour. Urol., 1917, **1**, 139.

11. Löhlein: Ueber die entzündlichen Veränderungen der Glomeruli der menschlichen Nieren und ihre Bedeutung für die Nephritis, Arbeit aus dem path. Inst. zu Leipzig, 1907, No. 4.

12. Volhardt and Fahr: Die Bright'sche Nierenkrankheit, Klinik, Pathologie and Atlas, 1914.

cences of the renal disease are probably due to the persistence of a septic focus in these organs. Similar results naturally may follow when there is a persistent septic focus elsewhere, and especially when the bacteremia is aggravated by septic endocarditis; but the latter is by no means necessary. I have been suspicious from the beginning of my investigations that chronic nephritis might also be due to such continued septic processes, and I believe that a careful clinical and anatomic study of such cases bears out this supposition.

I shall now attempt to sketch briefly the development of the different forms of glomerulonephritis.

I. ACUTE GLOMERULONEPHRITIS

The condition is usually due to some septic infection, preferably with streptococci arising in the tonsils or elsewhere. In the gross the kidneys are intensely congested, full of petechial hemorrhages, swollen and often quite edematous, so that they may be considerably enlarged. The capsule is tense and peels off readily. The glomeruli are intensely inflamed, permitting the escape of albumin, blood and leukocytes into the capsular space and the tubules. The connective tissue is in a state of inflammatory edema and is also full of leukocytes. The epithelium of the tubules is more or less degenerated, and these are filled with casts. The urine is usually scanty, but sometimes increased in quantity, and is naturally loaded with albumin. It is full of casts and leukocytes and sometimes contains blood in sufficient quantity to be easily seen with the naked eye, while at other times the amount is so slight that it has to be searched for with the microscope. Sometimes there is complete anuria. A bacteriologic examination of the sediment, when obtained with proper precautions, often reveals the causative agent. Often there is injury to the capillary endothelium not only in the kidneys but elsewhere, and we then observe general edema. Unfortunately, this general edema is not well developed in all cases, and there is only a slight puffiness of the face, or even this may be missing. In the absence of general edema, the condition is apt to be overlooked, especially if the primary infection (the tonsillitis, for instance) is not very severe, and the patient may never consult a physician. The disease is especially common in children, and urinalysis should never be neglected in any case that seems at all suspicious, especially when the patients do not recover promptly and completely. A "generally run down" condition and continued anemia are important signs. This early stage apparently is the only one in which the disease may be cured by proper treatment of the septic focus, rest in bed and proper diet. Therefore, it certainly is better to examine 100 or even 1,000 urines unnecessarily than to miss one case. Unless the original septic infection kills the patient or the infection heals completely and the patient recovers, a subacute condition is apt gradually to develop.

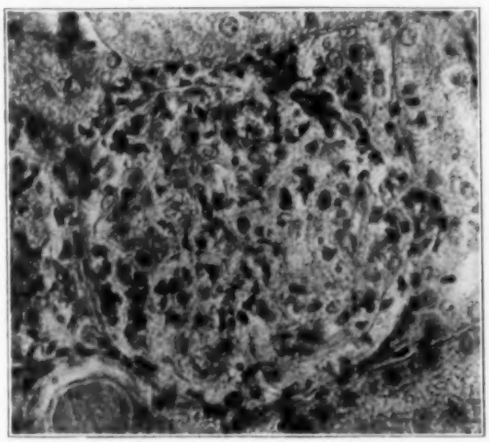


Fig. 1.—Acute glomerulonephritis in a rabbit that had received eleven intravenous injections of a pure culture of a long-chained hemolytic streptococcus obtained from the pleural exudate in a case of carcinoma. Glomerulus congested and infiltrated with leukocytes.

II. SUBACUTE FORM

These cases, however, often develop insidiously without preliminary acute attack, so that when symptoms arise it is impossible to ascertain the date of onset. The kidneys become even more congested and swollen, and the hemorrhages continue. The necrotic spots in the diseased glomeruli and the coagulated exudate in them gradually become replaced by cellular connective tissue, which eventually destroys the glomeruli completely and converts them into an inert mass of fibrous connective tissue. At the same time the inflamed connective tissue between the tubules begins to proliferate. In the later stages, when the connective tissue becomes more massive, evidences of shrinkage may make their appearance. The tubules still contain blood, leukocytes and casts. The epithelium usually exhibits very severe degenerative processes. In some of the cases the blood vessels in the kidneys begin to develop serious lesions which are especially well marked in the arterioles in the vicinity of the diseased glomeruli. They consist in a lateral thrombosis evidently due to injury to the endothelial lining, which process eventually may completely close these small arteries. Eventually organization follows, and a fibrous thickening of the walls of the small blood vessels results. The larger arteries may also be the site of a beginning fibrous thickening of the intima. The large veins in such cases may be entirely occluded by massive thrombi. The urine continues full of albumin, casts and usually leukocytes. Although the hemorrhages persist in the kidneys, the blood does not seem to be carried out so readily, but it can usually be found by repeated microscopic study of the sediment. While at first more or less scanty, the urine in the later stages may become thin and plentiful. Bacteria are more rarely found in the sediment except in early cases. There is usually more or less general edema, although in this form also edema may be missing. Headache, nausea and vomiting make their appearance, and there may be typical convulsions. The anemia commonly is severe and progressive. Neuritis optica with retinal hemorrhage may be observed, and in the later stages the blood pressure climbs up to from 160 to 180, even to 200 and more. This rise of pressure is possibly due to the irritative effect of the same substance or substances which cause the damage to the endothelium of the blood vessels, the irritation causing an increased tonus in the arterioles all over the body which forces up the general blood pressure. The rise of pressure certainly precedes any noticeable general anatomic change in the small arteries, and may persist for long periods of time without being followed by any such change. Whether or not the irritation is to be followed by anatomic changes appears to be purely accidental. It is interesting to note that with these exceedingly severe lesions in the kidneys the phenolsulphonephthalein excretion still may be fair (from 25 to 30 per

cent. in two hours), in spite of the fact that the blood urea may go up to 100 mg. and more. These cases last for months and years with exacerbations and remissions. Sometimes the patients are fairly well for a long time and the condition is discovered only accidentally, or in the last stages, when severe symptoms begin to arise. The patients die of their septic condition, or more commonly of asthenia or uremia.

III. CHRONIC FORM

It is naturally impossible to draw sharply the dividing line between this form and the preceding one either clinically or anatomically. In this group are the largest number of cases. Since the publication of my last papers[13] on this subject, I have been able to find seventeen new cases of true nephritis among about 400 necropsies. One of these was an acute one following a streptococcic peritonitis after confinement, of two months' duration. Four were of the subacute type. One of these was caused by a streptococcic osteomyelitis of the sternum of seven months' duration, and three followed tonsillitis. The remaining twelve were chronic cases. In four of the latter the history and the examination were incomplete, usually because the patients entered the hospital in a moribund condition, or because a complete necropsy was not permitted. In the remaining eight there was either a definite history of severe, often repeated attacks of tonsillitis, with or without rheumatic symptoms, or a very characteristic condition of the tonsils was discovered at necropsy, which to me appears to be of great interest.

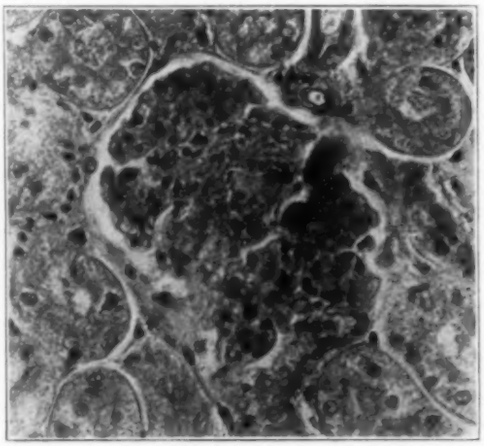


Fig. 2.—Recent glomerular lesion in a rabbit that had received seven intravenous injections of a pure culture of a nonhemolytic diplostreptococcus from the heart blood of a patient with acute leukemia. One of the loops contains a mass of micrococci, another is filled with a hyaline thrombus.

The tonsils in these cases were not enlarged; in fact, usually they were more or less shrunken. In several of these cases they were carefully examined by the clinicians and pronounced to be normal or practically so. At necropsy one finds them retracted behind the pillars of the fauces. The surface is smooth, more or less white and cicatrized, and the openings into the crypts and the supratonsillar fossa are much narrowed, often practically obliterated. When one squeezes these tonsils, grumose material and pus, often in large quantity, squirts through the narrow openings from the dilated pockets behind. In the pus one finds great numbers of diplostreptococci either in pure culture or mixed with other bacteria. The supratonsillar fossa especially is usually very much distended and full of purulent material, and its walls may be more or less necrotic, although in sections of such tonsils the epithelial lining of the crypts may be entirely intact. Such sections usually show also heavy bands of old scar tissue throughout the tonsils, the contraction of which caused the partial occlusion of the orifices of the crypts. These old "pus bags" probably keep the process in the kidney going by more or less intermittent activity, and I wish to emphasize again that this condition may be present without any knowledge on the part of the patient, and that it is difficult to discover clinically. Why such a condition, which undoubtedly is quite common in persons not afflicted with nephritis, should cause chronic progressive nephritis in some cases, chronic rheumatism in others, or both, or sometimes no general trouble whatever, is quite as difficult to explain as the experimental observation that if one injects rabbits intravenously with various strains of streptococci one sometimes observes a severe reaction on the part of the kidneys and sometimes none at all, nor does one always get the same effect with the same strain of bacteria.

The development of these chronic cases is usually very insidious. The course extends over many years. The original lesion in many of them undoubtedly dates back to childhood. The existence of the condition is often not noticed by the patient until quite late because the symptoms may not be pronounced and the patients are accustomed to them. The clinical history usually begins only a few months or at best a few years before death, when there is often quite a sudden change for the worse from a condition of apparently continued well-being. The kidneys at necropsy are always much shrunken, either smooth or granular or sometimes more coarsely lobulated. Whether they ever were swollen considerably at any stage of development of the disease appears to me doubtful. They show the characteristic microscopic picture of an advanced renal sclerosis with small remnants of badly degenerated or sometimes fairly intact hypertrophic kidney tissue. Even in this late stage, subacute lesions indicating more recent recrudescences may still be present. The remnants of renal tissue are often so exceedingly small that one never gets over wondering how the individuals have been able to exist so long before they finally die of the disease. The arteries in the kidneys are usually severely affected, but there are striking exceptions to this rule. There may be a good deal of general arteriosclerosis, but this also is by no means constant. The blood pressure is usually high (from 200 to 250) and there is a marked hypertrophy of the heart, but as I have pointed out before, there seems to be a group of cases in which extreme destruction of the kidneys is observed without hypertension or cardiac hypertrophy.

When these patients come to the hospital the urinary changes are usually well marked. While they are still fairly well, they usually have polyuria and hyposthenuria. Toward the end the amount of urine naturally decreases. At this stage there is always considerable albumin in the urine. Casts may be plentiful or appear in showers; occasionally there is a slight admixture of blood or leukocytes. The phenolsulphonephthalein secretion in the later stages is always diminished, sometimes practically entirely suppressed; toward the end the blood urea goes up with the appearance of true uremia and often reaches very high fig-

13. Ophüls, William: Nephritis: A New Series of Cases with Review of Recent Literature, THE JOURNAL A. M. A., Nov. 13, 1915, p. 1719; The Pathology of Nephritis as Illustrated by Thirty-Two Consecutive Cases, Stanford University, 1916.

ures. Edema may be a prominent symptom, but there are the well known "dry cases." The first symptom which in many of these cases drives the patient to the physician is interference with the eyesight due to albuminuric retinitis. The anemia is often well marked and sometimes very severe. The temperature is often quite fluctuating, frequently subnormal. The pulse is usually high and the pulse rate varies greatly. The patients most commonly die in uremia. Sometimes the condition is aggravated, or sudden death is produced, by lesions of the brain, due either to vascular obstruction or to hemorrhage.

The patients included in this last group vary so much in their rate of development, in the gross and microscopic appearance of the kidneys and in their symptomatology, that one can readily understand why both from an anatomic and from a clinical point of view numerous efforts have been made to subdivide this group into subgroups, according to whether, anatomically, the disease of the blood vessels in the kidneys or elsewhere plays a prominent rôle, or whether, clinically, the signs of cardiovascular disturbance predominate over those of renal origin, or vice versa. So far as I can see, and I have now studied about thirty cases carefully, both from the clinical and from the anatomic point of view, such a subdivision does not seem feasible. I acknowledge that the number is too small to arrive at any final conclusion. I wish to emphasize, however, that from this group have been rigidly excluded all cases in which anatomically the disease of the kidney was not well marked and extensive, which procedure, so far as the clinical histories go, has eliminated all the ordinary cardiovascular cases. I believe that the chronic cases collected by me correspond to Group 3 of Christian's[14] most recent clinical classification, and probably take in part of his Group 2.

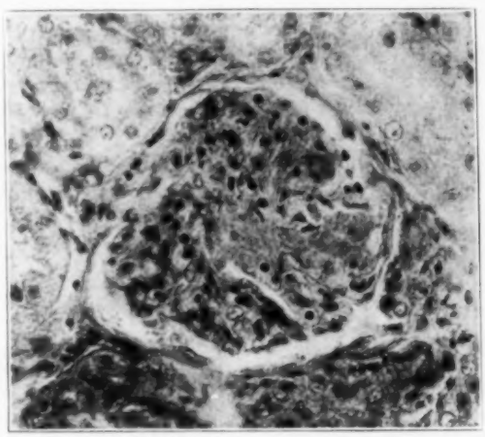


Fig. 3.—Later glomerular lesion in another glomerulus of the same rabbit, showing hyaline necrosis of a large part of the glomerulus and beginning adhesion to capsule.

SUMMARY

1. There is a well defined disease of the kidneys caused by general sepsis arising from some infected focus and often made progressive by the persistence of such a focus.

2. Since the glomeruli in this disease show the most characteristic and constant lesions, we may speak of it as glomerulonephritis, and as the lesions are so distinctly of an inflammatory character, as true nephritis.

3. The disease occurs in three forms: the acute, the subacute and the chronic type.

4. The characteristic glomerular lesions may be reproduced in animals by injection of bacteria into the blood stream.

5. The majority of cases in man are due to streptococci, but other bacteria may cause similar lesions in the kidneys and elsewhere.

6. Many of the chronic cases seem to be caused by a peculiar form of chronic suppurative tonsillitis due to diplostreptococcic infection.

14. Christian: A Consideration of the Clinical Classification of Chronic Nephritis, Cleveland Med. Jour., 1917, **16**, 223.

JUXTA-ARTICULAR BONE LESIONS OF THE HIP *

HENRY LING TAYLOR, M.D.
Fellow of the American College of Surgeons
AND
GEORGE BARRIE, M.D.
Fellow of the American College of Surgeons
NEW YORK

The beginner in bone surgery is apt to think of the diagnosis of disease of the hip joint as a simple matter, but longer experience will convince him of his error. As pointed out by Gibney in 1884,[1] the diseases of the hip are many, owing to different infections and pathologic processes, and may be located in the joint, in the bone adjacent to it, or in the soft parts. Many affections which were formerly classed as hip disease or tuberculosis of the hip, especially since the wide use of the roentgen ray in diagnosis, have come to be recognized as distinct conditions. Such conditions, now classed as separate affections, are coxa vara and slipped epiphysis, lesions fairly well known and not difficult to diagnose. More recently, osteochondritis of the hip, Perthes' disease, or quiet hip disease (Taylor[2]), a perfectly benign affection, has been studied and separated from tuberculosis of the hip. While studying Perthes' disease, characterized by its mild symptoms and course, our attention was called from time to time to lesions in the neck of the femur or in the trochanteric region, benign in character and causing mild symptoms extending over a considerable period. These cases, usually brought to the surgeon on account of a persistent lameness with little pain or stiffness, could not be distinguished clinically from early osteochondritis; but the roentgen ray revealed instead of a flat and irregular epiphysis, a perfectly normal head and epiphysis with a spot of osteolysis (light spot) in the neck or trochanteric region.

These cases are often due to the process known as hemorrhagic osteomyelitis (Barrie[3]), which never results in pus formation. In another class of cases, localized infectious foci with pus formation are found, the so-called "bone abscess," which may result from the acute invasion of any pus-forming organism, or may arise from the lighting up of a local process in an old osteomyelitis. Several examples of roentgenographic bone spots, both of infectious and of noninfectious origin, will be given in this paper. Similar processes may occur about the acetabulum, but these will not be considered here, nor will malignant or benign neoplasms, tuberculous and syphilitic disease, or other

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Gibney, V. P.: The Hip and Its Diseases, Birmingham, New York, and London, 1884.

2. Taylor, H. L., and Frieder, W.: Quiet Hip Disease, Surg., Gynec. and Obst., February, 1916.

3. Barrie, George: Cancellous Bone Lesions, Ann. Surg., February, 1915.

rarer conditions which may produce local bone lesions in the neck and trochanteric regions.

It is well to know that lesions of soft parts adjacent to the hip, such as abscess of the soft parts, bursitis, and hematoma, may affect the function of the hip

Fig. 1 (Case 1).—Hemorrhagic osteomyelitis in a girl, aged 7; there were mild symptoms for four weeks.

joint without affecting the bone, or even the synovial membrane. Acute and transitory conditions simulating an acute synovitis may result from strain or mild infections and pass away after a few weeks, leaving no impairment; but our discussion will be confined to the two classes of local bone lesions mentioned above, when occurring near the hip. They also occur near the knee and ankle and in the upper extremity, and may rarely be multiple; it is hoped to describe these conditions in later papers.

The one common symptom of the various hip conditions, at least when somewhat advanced, is lameness, and when a child suffering with lameness of longer or shorter duration is brought to the physician he should never rest satisfied until a positive diagnosis is made, no matter how mild the symptoms. This means that, besides a thorough clinical examination, the roentgen ray should be used in every doubtful case. Repeatedly we have seen, in cases of mild lameness with few or no other symptoms, the diagnosis established at once by the presence of a light spot on the roentgen plate.

Certain light spots are due to focal osteolysis caused by hemorrhagic osteomyelitis (Barrie). The process may exist without causing any symptoms, as in a case (Case 3) recently observed, in which a roentgenogram of the hips was made, simply because the boy had a spot in the lower end of the opposite femur. In several of these cases, the lesion was of large size and in an advanced stage, though the lameness had lasted only a few weeks. In many instances there is a history of a near or remote fall or injury. Usually the lesion is as large as a dime or a nickel before the advice of a bone surgeon is sought. By this time there is a little wasting of the thigh and leg muscles, and a little pain about the hip or knee. As the lesion becomes larger, the lameness and pain increase, the activity of the child is diminished, and his condition is not quite up to par, though often the general health is entirely unaffected; there is no fever. In a few cases there are sudden exacerbations with severe pain and inability to walk. The process may go on until the entire area at the base of the neck and the trochanter is involved, leaving only a cortex of egg shell thinness.

In two of our patients (Cases 8 and 9), the femur broke on slight violence, in both instances healing kindly under splinting. These cases are usually called tuberculosis of the hip and treated as such (overtreated), even by experienced diagnosticians; they are occasionally called sarcoma.

Among our cases there are several with spontaneous healing, with fibrosis or ossification and complete restoration of function, under general or symptomatic treatment and regulation of activity, and sometimes without treatment. In other cases, the cavity becomes larger with or without expansion of the bone cortex, and sometimes perforation occurs. A piece of the wall may come away as a flake, but there is no real sequestrum, no involucrum, and no pus formation. In these advancing cases evacuation of the focus with moderate curettage of the cavity, and in the larger ones the introduction of autogenous bone chips, give uniformly good results. The cavity becomes obliterated and usually reossified. When the cavity is opened it is found filled with reddish or grayish granulations, much like spleen pulp, or by a yellowish or grayish mass like custard, or by mottled fibrous material, or again by a straw-colored serum. The cavity may or may not have trabeculae or a lining membrane; it is sometimes multilocular. The mild curettage and the introduction of bone chips stimulate osteogenesis, and the result is usually perfect or nearly perfect restitution of structure and function.

Fig. 2 (Case 3).—Hemorrhagic osteomyelitis in a boy, aged 7; there were no symptoms.

General hygienic management and a reasonable curtailment of activity, and short periods of splinting and recumbency when indicated, are effective in the milder cases without operation. The lesion and lameness may last for several years.

THE PATHOLOGIC PICTURE IN HEMORRHAGIC OSTEOMYELITIS (BARRIE)

In about 75 per cent. of our series of bone lesions termed hemorrhagic osteomyelitis, a definite history of initial trauma or injury has been obtained. These injuries, not necessarily severe, produce numerous minute fractures of some of the delicate bone trabeculae that compose a great part of the osseous structure. In turn, there follows a disturbance of the normal anatomic circulatory apparatus. As the venous supply is here composed of vessels that are without any muscular coat, the lack of support of trabecular framework causes dilatation of the lumen of the vessels, varicosities, venous stasis, and rupture with effusion. The size of the initial lesion, through solution of continuity, may now be increased by pressure from within, exerted against the very delicate normal surrounding osseous structure, causing inhibition of nutrition, rarefaction and further destruction of the bone trabeculae, with repetition of circulatory disturbance noted above.

Efforts at regeneration and restoration are brought about in the formation of highly vascular granulation tissue. As no virulent or infective process is here involved, the injury being due apparently to mechanical insult to tissues that are sterile, and as there is no great massive destruction of structure, the inflammatory process is of a mild type.

It is a well known fact that a low grade inflammation producing granulation tissue always causes proliferation beyond its given need. In these bone lesions it is found that, when the bony defect is filled, several changes take place.

1. If the chemotactic properties in the blood of the individual cause a sufficient stimulant reaction, the vascular granulations are converted into final osseous structure, and full anatomic restoration and architectural arrangement of tissues result.

2. The host may possess the power to produce a metaplasia in the lesion by converting the granulation tissue that fills the bony defect into fibrous structure only. In this event the further progress of the lesion is stayed. It is Nature's effort at cure. While the stimulant reaction of the blood is not enough to give normal restoration of structure, it marks the end of any further progress in the lesion. The fibrous metaplasia causes contraction and retraction of the former exuberant vascular granulations. This stage of the process gives a picture of a fibrocystic osteomyelitis. Absorption or disappearance of all connective tissue apparently sometimes occurs, leaving a bone cavity without any lining membrane, but with bony walls rather more dense than the adjoining outlying tissue. Such a cavity may contain sanguineous fluid only or, what is perhaps more frequently observed, a thin straw-colored fluid. The fluid is sterile, and pus is never present.

3. If conditions pertaining to the host are hostile to either of the foregoing reactions, we observe little or no change in the granulation tissue occupying the bony defect. The attempts at regeneration are feeble, apart from the proliferation of granulation tissue. A vicious circle is thus established. Overproduction of granulations causes pressure on the osseous structure that it is apparently unable to withstand. Nutritional inhibition of the framework produces rarefaction and further bone destruction, followed by circulatory disturbances and changes. This stage of the lesion, when it attains any size, is quite commonly wrongly termed, clinically and roentgenologically, "giant cell sarcoma." The histopathologic picture presented in this stage of the lesion is marked particularly by the presence of numerous multinucleated giant cells that are apparently performing their scavenger function of removal of débris. They are practically never present in the second phase of the lesion.

BONE ABSCESS

An infective bone spot may result from acute pneumococcus, staphylococcus, or other acute infection, when the invasion may be sudden, with fever, pain and constitutional symptoms. The symptoms are much more severe and the disability greater than in the noninfective bone lesions. The acute stage may pass over into a chronic stage, when the symptoms are moderate, more like those of a beginning hip tuberculosis, for which it is usually mistaken. Some cases begin without any acute symptoms and generally acquire a slight lameness which may persist for a considerable time, and cannot be distinguished clinically from either hemorrhagic osteomyelitis or beginning Perthes' disease. The roentgenogram will help, but is not always decisive as between a benign bone spot and a bone abscess. If the cavity at operation is filled with pus, which, however, may be sterile, the lesion is a bone abscess.

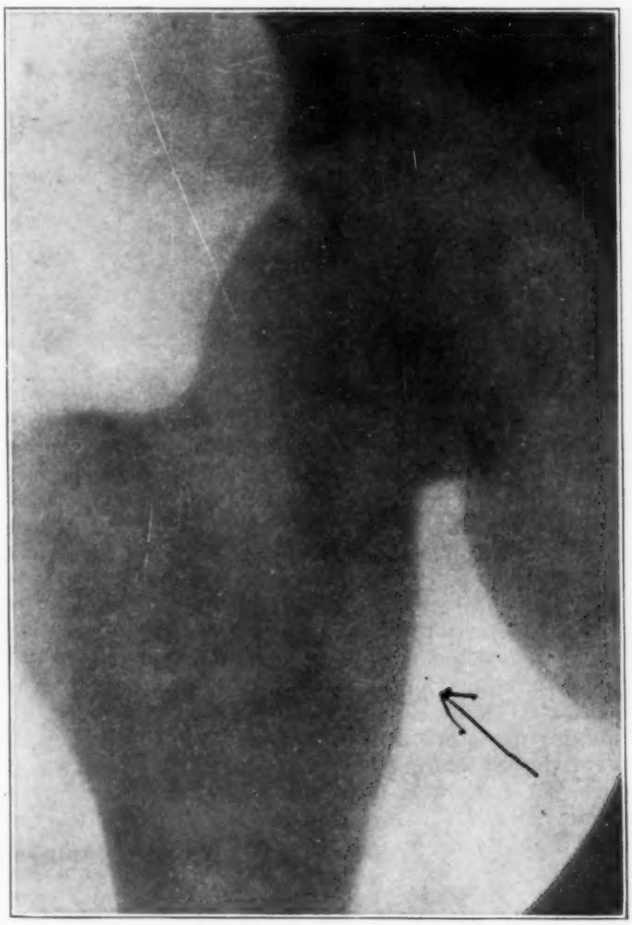


Fig. 3 (Case 4).—Hemorrhagic osteomyelitis in a boy, aged 17; there were mild symptoms for one year.

One of our patients (Case 13) was treated for several years for hip tuberculosis, when the bone abscess finally discharged itself in the trochanteric region, with

later ossification of the spot and complete restoration of function. These lesions, when extrinsic and virulent enough, cause hip joint symptoms by secondary infection or through extra-articular soreness.

In another class of cases, an old osteomyelitis of the upper end of the femoral shaft or the trochanteric

Fig. 4 (Case 5).—Hemorrhagic osteomyelitis in a girl, aged 7; there were symptoms for two weeks.

region may, after years of quiescence, light up into a local focus, showing a light spot on the plate (Cases 17 and 18). This is because bone once infected may become quiescent, but probably carries infective organisms ever after. They may light up locally after trauma or impaired nutrition, or without any visible cause, not becoming infected throughout but only causing one or more local bone abscesses.

The invariable treatment is to open the bone and evacuate, scrape out and disinfect the abscess. Pus is always found. The cavity should be wiped out with tincture of iodin, drained, and allowed to granulate from the bottom. Such cases do not always heal at once, but many heal in a short time, and most of them do so after a few weeks or months, while the pain and disability are quickly relieved.

Similar treatment is also suitable for tuberculosis confined to the trochanter or base of the neck, and such timely measures will often prevent an extension of the process to the joint.

COMMENTS ON ROENTGENOGRAPHIC APPEARANCES (BARRIE)

The roentgen-ray diagnosis of hemorrhagic osteomyelitis is not, as a rule, difficult to make. The plate shows a light spot with smooth outlines and no sclerosis; it may appear to be reticulated or multilocular. It is, however, frequently impossible to state positively, even with the combined clinical and roentgen-ray pictures, the exact stage which the lesion presents, that is, whether it retains its primitive form of a highly vascular granulation tissue mass (solid type so-called giant-cell sarcoma); whether the lesion is fibrocystic in character (metaplastic stage), or whether the contents of the localized area of osteolysis or bone disintegration are wholly fluid (so-called bone cyst). Our experience does not coincide with that of some roentgenologists, who state that they are able to differentiate between the roentgen-ray appearance of the solid and fluid lesions by the presence of trabecular division or septa. We have found identical roentgen-ray shadows in all stages of this lesion.

The roentgenographic picture in bone, exhibited by tuberculosis, syphilis, the acute infections, and benign and malignant neoplasms may readily be differentiated from the type lesions coming under the classification "chronic hemorrhagic osteomyelitis."

A conclusive and positive diagnosis regarding the exact type and stage of the lesion may be made only during operative interference. The light spot on the plate due to a bone abscess may be of irregular outline, may contain a sequestrum, or may be surrounded by sclerosed bone, but roentgenologically it is sometimes difficult to differentiate between a hemorrhagic osteomyelitis and a circumscribed medullary bone abscess that does not contain any sequestrum. The pus in such lesions is usually sterile.

Most of the cases on which the preceding study is founded were observed in the remarkably interesting material which has been at our disposal at the Hospital for Ruptured and Crippled, New York. Abstracts of the histories follow. In all, the descriptions of the lesions are founded on roentgen-ray plates.

CASES OF HEMORRHAGIC OSTEOMYELITIS OF NECK AND TROCHANTERIC REGION [4]

Case 1.—A girl, aged 7, Jan. 28, 1917, had a heart shaped light spot 1¼ by 2 inches in the left trochanteric region. Her health was good but she had stigmata of previous rickets. The patient slipped, four weeks before; this accident was followed by lameness and pain in hip and knee. At present all hip motions are painless and free; she has a moderate limp, and also slight atrophy.

Case 2.—A boy, aged 3, Sept. 24, 1914, had a light spot the size of a robin's egg in the left trochanteric region. There had been no injury; twelve days before he had moderate pain in the knee and could not walk. The pain was soon relieved by plaster-of-Paris spicas, which he wore eighteen months.

Fig. 5 (Case 8).—Hemorrhagic osteomyelitis in a boy, aged 6; he limped for four weeks. The roentgenogram was taken soon after the fracture through the pathologic area.

Case 3.—A boy, aged 7, April 24, 1917, had a light spot in the left trochanteric region the size of a robin's egg; there were no symptoms. The hip was examined with the roentgeon ray for information on account of pain, swelling, and lameness in the right knee, beginning three years before. The patient was treated for tuberculosis of the right knee at

4. Cases 7, 8, 9 and 10 correspond to Cases 11, 12, 13 and 14 in Barrie's[3] paper, "Cancellous Bone Lesions," which gives histories and illustrations.

Neponsit Hospital, and wore plaster-of-Paris splints one and a half years. At present the knee function is perfect; there is no limp and no pain. A roentgenogram of the knee shows an extensive light area from changes due probably to hemorrhagic osteomyelitis. This is the first case of multiple lesions of this character observed.

Fig. 6 (Case 12).—Bone abscess, secondary to chronic osteomyelitis of tibia of opposite side, in a girl, aged 9.

CASE 4.—A boy, aged 17, Sept. 14, 1905, had a light spot the size of a lima bean in the region of the left trochanter minor. He had been slightly lame for over a year; he had mild hip-joint symptoms, and was put on crutches and high sole, and hygienic management. A month later a roentgenogram showed an oval light spot the size of a dime near the lower trochanter; the bone of the neck was much thickened.

Feb. 22, 1906, the spot was increasing. The patient was running down, and the hip motions were somewhat limited. The patient was put under ether and the small cavity that was filled with granulations was scraped out. The patient has recovered perfect function of the leg and has remained entirely well.

CASE 5.—A girl, aged 7, Nov. 11, 1916, Dr. Whitman's case, had a multilocular light spot occupying the whole of the right neck, as revealed by a roentgenogram. The symptoms had existed two weeks.

CASE 6.—A boy, aged 11, July 12, 1914, had a light spot in the neck of the right femur. He had been hit by a horse one year before. He had pain in the right hip for six months, which was worse at night; he had limped for two months. A diagnosis of arthritis of the right hip was made.

Oct. 9, 1914, motion of hip was limited; the boy had worn spicas until two weeks before; there was no spasm; roentgenoscopy revealed a spot in the neck the size of a large pea.

March 8, 1915, the focus was curetted by Dr. Barrie. The patient had continued to wear a spica and to get worse. The pathologic report was extreme acute osteitis.

April 11, 1917, the patient was well, with excellent function and no limp. Roentgenoscopy was negative for spot.

CASE 7.—A girl, aged 8, October, 1913, had a light spot in the left neck and in the trochanteric region. The patient fell, bruising the left hip, six months before; she had had pain in the left hip and had limped for the last three months; there were night cries for two months; there was slight atrophy and limitation of motion. Clinical diagnosis was acetabular tuberculosis of the hip. A roentgenogram revealed a light area the size of a pigeon's egg occupying the base of the neck and trochanteric region to the cortex. The Wassermann test was negative. A plaster spica was applied in June, 1914, with increase in the size of the lesion and of stiffness at the joint. Operation was performed by Barrie, July, 1914.

Exposure exhibited a hemorrhagic fibrocystic loose edematous mass easily removed and separated with the curet. There was free bleeding from the cavity walls, which had no lining membrane. The naked eye appearance of the lesion was that of the transitional stage of localized hemorrhagic osteomyelitis, in which the solid mass was undergoing fibrocystic changes.

Microscopic examination made from material curetted away revealed a variable histologic appearance. The bone trabeculae exhibited a slight degree of disorganization and the medullary tissue evidence of fibrosis. The principal feature appeared to be the presence of new-formed tissue composed for the most part of medium-sized fibroblastic cells. Here and there a multilobulated nucleus and a rare mitotic figure were seen. A few giant cells of the scavenger foreign body type were observed about the areas of disintegration, together with moderate hemorrhage, scattered foci of pigmented cells, and round cells.

In May, 1917, recent roentgenograms had shown reossification of the cavity. Three months before, the patient walked perfectly and was free from disability of any kind.

CASE 8.—A boy, aged 6, March, 1914, had large light area in the left neck and trochanteric region, as shown by roentgenogram. He had fallen down stairs a year before, bruising the left hip; he limped four weeks; there was no pain; there was tenderness over the trochanter, with slight limitation of motion. Wassermann and von Pirquet tests were negative. A plaster spica was applied. Several weeks later the patient was brought to the hospital unable to walk after a fall. Roentgenoscopy revealed a pathologic fracture through the light area.

June, 1914, operation, by V. P. Gibney, revealed a cavity without lining membrane filled with straw-colored fluid. A plate taken several months later showed union of fracture, filling in of cavity, and considerable reossification.

CASE 9.—A girl, aged 4, May 29, 1914, had a large, light spot in the trochanteric and adjacent regions, as shown by roentgenogram. Eighteen months before, the patient fell out of bed. Four weeks before, the child began to limp; there were no joint symptoms, and measurements were equal, but there was tenderness over trochanter.

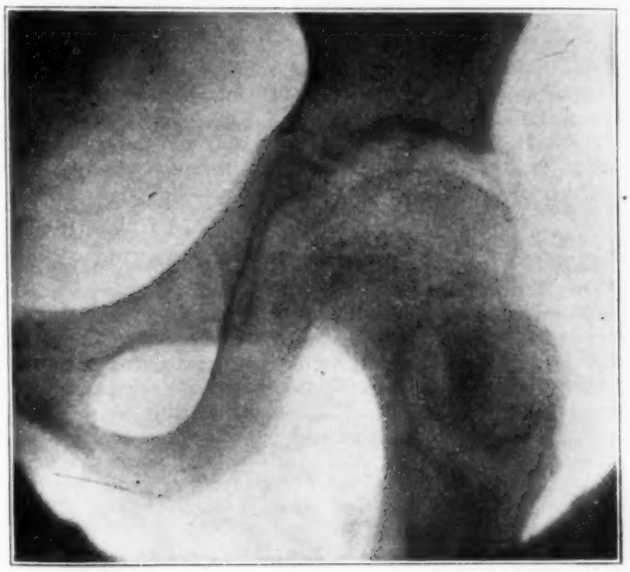


Fig. 7 (Case 13).—Bone abscess in a girl, aged 9; there were symptoms for three years.

Three days later the child tripped and fell and was brought at once to the hospital unable to move the leg. A roentgenogram revealed a fracture below the trochanter through the pathologic area.

CASE 10.—A girl, aged 18, Feb. 28, 1911 (patient of Dr. William Frieder), had multiple light spots in the right trochanteric region, which was enlarged. Six years before

the mass had been curetted out, and a pathologic diagnosis of giant-cell sarcoma was made. Several Wassermann tests were negative. This patient was recently seen, ten years or more after the operation. She was in good health and walked well.

Fig. 8 (Case 13).—Roentgenogram taken one year and eight months later; there was a cure after spontaneous discharge of the abscess.

BONE ABSCESS CASES

Case 11.—A girl, aged 2, Feb. 15, 1915, had large focus at the base of the right neck, with sequestrum, the size of a pea. Limp had been noticed six months before; her general condition was poor; the right leg was one-quarter inch shorter than the left; there was slight limitation of hip motion. The Wassermann test was negative.

Case 12.—A girl, aged 9, April 8, 1916, had a small focus at the middle neck of the left femur. Five years before she had had osteomyelitis of the right tibia with four operations. She had had pain in the knee the last six months; lately there had been swelling in the left adductor region; there was considerable limitation of motion.

April 11, 1916, the neck of the femur was tunneled from below the trochanter by Barrie; sequestrum was removed; the abscess in the adductor region was incised.

Nov. 9, 1916, the sinus was closed, the patient walked easily, with a slight limp.

Case 13.—A girl, aged 6, Oct. 6, 1912, had a bone abscess in the right neck; she had had scarlet fever and pneumonia in 1910; her general condition was poor; there had been discomfort in the knee and night cries for two months. A diagnosis was made of tuberculous hip. She wore spicas for three years. An abscess several inches below the trochanter was opened in July, 1914; closed in December, 1916. A roentgenogram revealed a large light spot in the neck.

March 1, 1917, walking had been without limp or complaint for twenty months; her general condition was good; her legs were equal, hip motion was normal; roentgenograms were now negative for the spot.

Case 14.—A girl, aged 14 months, Oct. 26, 1911, had a bone abscess of the right neck; there were atrophy and pain in the right leg. The first diagnosis was poliomyelitis with history of attack four months before.

May 1, 1912, the child had night cries and was losing flesh; rotation was limited; the diagnosis was changed to tuberculosis of the hip. Soon after the roentgenogram showed a large spot in the neck and atrophy of head. The diagnosis was again changed to bone abscess.

March 5, 1913, the child was plump and rosy; she had almost full hip motion; she still walked lame, with no pain.

May, 1917, the patient had been in a home for convalescent cripples for two years.

Case 15.—A boy, aged 9, Aug. 11, 1915, had a bone abscess of the left hip. He had pain in walking and at night. The attack came on suddenly four months before. There was some limitation of motion at the left hip. Roentgenoscopy was negative. The diagnosis was tuberculosis of the hip, and a plaster spica was applied.

Oct. 22, 1915, the thigh was flexed and adducted; two weeks before, the pain suddenly became severe and the patient could not walk; the hip was painful on motion; he was admitted to the hospital; the pain was relieved by traction in bed. A roentgenogram revealed a spot in the inferior lip of the neck, apparently containing a sequestrum.

Feb. 7, 1916, the patient was readmitted for pain and night cries; the abscess had appeared below Poupart's ligament and was incised.

July 14, 1916, the patient was free from pain, and was discharged in fair condition; a short spica was supplied and crutches were used.

Case 16.—A girl, aged 18, Jan. 29, 1916, had a bone abscess of the neck of the left femur. Twelve years before she had an abscess back of the trochanter, which healed in six months; she had had no further trouble until recently; she had had pain in the left thigh, knee and hip. She had no pain or stiffness on moving the hip. A roentgenogram revealed a light spot the size of a dime near the trochanter. Operation was advised and declined. The pain got worse and was considerably relieved by fixation in a spica.

Case 17.—A man, aged 23, Oct. 9, 1916, had chronic osteomyelitis of the upper end of the right femur, with bone abscess near the trochanter. Pain in the right hip and groin to the toes came on slowly five years before; the patient could not get off his chair for five weeks; he did not feel sick; since then he had had similar but milder attacks lasting about a week, every two or three months. Two years before, a sinus appeared 4 inches below the trochanter, which was still discharging. Two weeks before an abscess appeared below the trochanter. The patient's health is good; he is not lame, has

Fig. 9 (Case 16).—Bone abscess in a girl, aged 18; there were symptoms for a few weeks, but she had had abscess twelve years ago.

no pain, with hip movements free. A roentgenogram shows a spot near the base of the trochanter.

October 18, curettement of the focus was performed by Taylor. The pathologic report was chronic inflammation and fibrosis.

Case 18.—A man, aged 34, Dec. 4, 1916, had chronic osteomyelitis of the upper third of the right femur, with bone

abscess. The patient had osteomyelitis of the upper third of the right femur at the age of 9 years, resulting in several sinuses, which did not entirely heal until eight years later. He was in bed one year at the beginning of the attack. He had been well and free from pain for seventeen years, until a month ago, when he had a dull pain in the upper part of the thigh, growing worse. There is acute tenderness at the outer and posterior aspect of the shaft of the femur below the trochanter and some induration. The leg is in good position with about 10 degrees of motion at the hip. The affected leg is a quarter inch longer than the other. A roentgenogram shows an area of bone induration, with a light spot the size of a pea in the middle.

Dec. 20, 1916, curettement of the focus was performed by Taylor.

March 1, 1917, the pain was relieved at once; the wound healed and the patient walked well.

SUMMARY

Local bone osteolysis may cause a light spot in the neck or trochanteric region on the roentgen plate. This may be due (*a*) to hemorrhagic osteomyelitis, which is a benign process usually running a chronic course with mild symptoms, notably lameness, and frequently ending in recovery, sometimes with and sometimes without an operation. Pus is never present; or (*b*) to a bone abscess with the formation of pus, which may run an insidious course with mild symptoms, or a more acute course with severer symptoms, and if evacuated and drained, usually ends in recovery with good function.

Both classes of cases are often diagnosed as hip tuberculosis, and sometimes as sarcoma. An early correct diagnosis enables the surgeon to simplify the treatment and save the adjacent joint by a timely operation, when its integrity is threatened.

125 West Fifty-Eighth Street—24 East Forty-Eighth Street.

ABSTRACT OF DISCUSSION

DR. E. D. OPPENHEIMER, New York: I should like to know which of the patients with these local lesions had also lesions in other bones; also what is the relation between this disease and the general metaplastic osteitis described by von Recklinghausen. Does the pathologic picture resemble that of the other disease?

DR. ARTHUR STEINDLER, Iowa City, Iowa: My understanding is that it is now being recognized that osteitis deformans and the osteitis fibrosa of von Recklinghausen are not entirely different diseases. The osteitis deformans (Paget) is a generalized form of the other. From the roentgenogram I had the impression that the cysts had developed on the basis of an old osteitis fibrosa. They had a hemorrhagic content. I should like to know the differential point between that form and the cases that we diagnose as the osteitis fibrosa of von Recklinghausen.

DR. HENRY LING TAYLOR, New York: I would call attention to the importance of distinguishing infective and noninfective bone spots near the hip from hip tuberculosis, and to their more favorable prognosis under proper management. Dr. Barrie will answer the pathologic question.

DR. GEORGE BARRIE, New York: The lesions of hemorrhagic osteomyelitis are single lesions; that is, they have been single in the cases observed, numbering about forty. Three fourths of our patients have given a history of initial trauma. I think probably 75 per cent. of the lesions that start as a hemorrhagic osteomyelitis later result in a so-called bone cyst. The remainder retain their primary pathologic picture of hemorrhagic osteomyelitis, which is frequently termed medullary giant-cell sarcoma. I think they are not sarcomas, because we know that the giant cells found in the mass are not tumor cells. Further, I have been able experimentally to produce the lesion simulating so-called medullary giant-cell sarcoma.

THE TREATMENT OF SCOLIOSIS*

FRANK E. PECKHAM, M.D.
PROVIDENCE, R. I.

From the earliest times, scoliosis has been written about and described in such a way as to make it the most complex subject in orthopedics. It would seem that if the explanations and descriptions could be reduced to simpler terms, the principles of treatment would be fewer and simpler, even though the ultimate results were still difficult of attainment. Rational treatment of any disease or abnormal condition is founded directly on etiology and pathology. In these later days, physiology is a little better known and is becoming of tremendous importance in giving a clearer understanding of many conditions.

In the first place, there must be a decision as to whether scoliosis is a deformity unaccompanied by disease of the structures involved, or whether there is a diseased condition of the bones and ligaments. My studies have convinced me that the bones and ligaments in these cases are in a softened condition, otherwise deformity of this type could not have developed. Also, it would seem to me that the term "scoliosis" should be used only to indicate a syndrome of a deformity dependent on such softened and yielding structures. I cannot agree with the idea that scoliosis is deformity without disease. There are thousands of children habitually assuming faulty positions every day, but only in the few does scoliosis develop, and in those few, the bones and ligaments are too soft to support the superincumbent body weight.

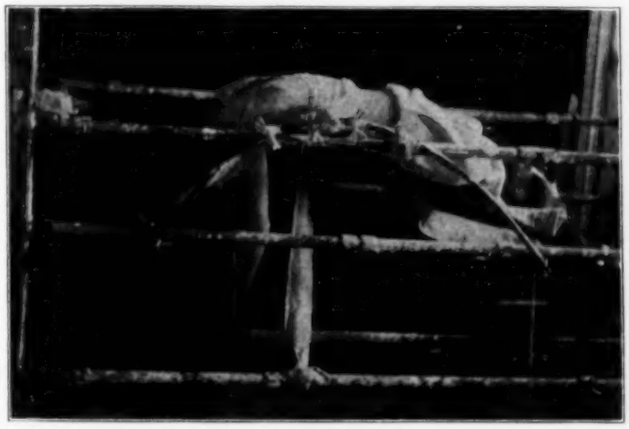


Fig. 1.—Patient in position on frame.

There are deformities simulating scoliosis. A child may have a short leg, thereby producing a tilting of the pelvis, in consequence of which curves appear in the spinal column and one shoulder is carried lower than its mate. Raising the shoe on the short leg immediately corrects the deformity, thus demonstrating the absence of the syndrome of a "deformity dependent upon softened and yielding structures."

CASE 1.—A mill girl consulted me complaining of a low shoulder and a curved spine. She had been carrying a heavy basket every day in her work and always on the same shoulder. A change of occupation was followed by a restoration to correct form. Here also there was entire absence of the syndrome. These cases, therefore, are not real scolioses,

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

and some other nomenclature should be applied, possibly "pseudoscolioses."

CASE 2.—A young married woman with a moderate deformity of the spine presented herself with the following conditions: Her first child was 4 months old and very greedy.

Fig. 2 (Case 3).—Condition, March 24, 1917.

In this way, the strength of the mother had been much diminished. One shoulder was low, the spine was becoming curved, and there was an increasing amount of pain in the back. In other words, calcium metabolism had been interfered with. As I did not wish to apply a plaster jacket while the breasts contained milk, the advice was given to wean the baby and report for a jacket when the milk had completely disappeared. Here was a developing deformity dependent on softened and yielding structures; in other words, a scoliosis. This patient waited about three months before returning, at which time the back had completely straightened, the pain had disappeared, and the young woman presented every appearance of perfect health.

I have previously reported the case of a girl, aged 7, with a severe grade of scoliosis due to much softened bony and ligamentous structures following an attack of influenza, and another presenting the condition of hypothyroidism. Here the deformity disappeared, under the administration of thyroid extract.[1]

The foregoing cases appeal to me as representing the difference between a real scoliosis and what perhaps might be considered a pseudoscoliosis, the one without disease of the involved structures, the other with. Deformity of the spine following an infantile paralysis might be termed a paralytic scoliosis, just as, similarly, we speak of a paralytic clubfoot.

If the hypothesis be accepted that scoliosis is dependent on a softened condition of the bones and ligaments, due presumably to some interference with calcium metabolism, then it seems fair to consider that it is the downward pressure of the head and body weight on this disease-weakened structure which produces the deformity. The comparison should not be with a clubfoot, but with a bow-leg or knock-knee; in other words, softened bony structures yielding to superincumbent body weight.

The etiologic factor then becomes the process which interferes with calcium metabolism. This may be rachitis, infections (including autointoxications), or the rapid growth which sometimes takes place in adolescence. The physiology of the endocrine organs is of great importance, and the thyroid gland, in particular, is supposed to preside over calcium fixation. When these physiologic processes go wrong, trouble arises.

These are some of the factors which produce a softening of the vertebrae and ligaments. These vertebrae and ligaments, yielding to the superincumbent body weight, become pushed downward and thus the deformity of scoliosis is produced. It is a scoliosis from the earliest stages. There may be different degrees of severity, both of symptoms and of deformity, but it is scoliosis all the way through. The duration of this softened condition usually extends through quite a period of time, and it is the treatment of this condition to which sufficient attention has not been given. This is pure physiology. In cases of hypothyroidism, the thyroid gland may be indicated. In the rapid growth of adolescence when there has been no scoliosis, but the symptoms have been backache and headache, swollen eyelids, the entire lack of strength and often the appearance of stupidity, the administration of thyroid extract will usually produce the desired result. One case referred to above, in which scoliosis was present in addition to all of these symptoms, the deformity disappeared, as illustrated in the original article. In other cases when it was uncertain

Fig. 3 (Case 4).—Spine of a girl, aged 18, before beginning the present form of jackets, Jan. 6, 1916.

1. Peckham, F. E.: Am. Jour. Orthop. Surg., December, 1916; Rhode Island Med. Jour., January, 1917.

what process was going on, I have used the mixed gland tablets. With more definite knowledge along these lines, much better physiologic results must be obtained.

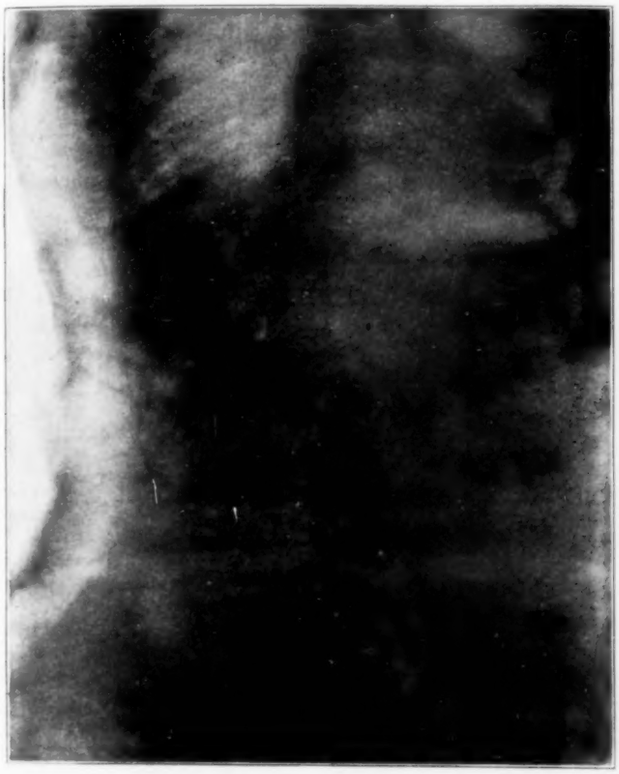


Fig. 4 (Case 4).—March, 1916; second jacket.

Regarding the mechanical treatment, I have tried to make it such that these patients could continue their customary duties without interruption. Consequently some of them are attending school daily, others are working in the shops, and one stenographer is continuing her work without any difficulty. The patient is still placed face down over a curved frame (Fig. 1), so that the spine becomes lengthened and some of the curves are improved by the position alone. With the body in different degrees of flexion, rotary pulls are made, thus correcting as much as may be possible, and the patient still remain comfortable. Traction on head and feet, which was used in earlier attempts, has been omitted. It caused so much pressure on the stomach that nausea and vomiting resulted. In my work thus far, a new jacket has been applied once a month, in order to start all over again at frequent intervals, with the body in as good a position as the patient will tolerate.

CASE 3.—J. S., first reported in May, 1916, is retained in plaster, as shown in Figure 2.

CASE 4.—E. M., a girl, had practically attained her growth when the present method of treatment was begun. For the preceding year, other forms of jackets and braces had been tried, but the deformity was increasing, until in January, 1916, the condition was as is shown in Figure 3. Jackets have been reapplied monthly, and Figure 4 shows the condition in March, 1916. Figures 5 and 6 show the condition as late as April, 1917. She is now 19 years of age, and still improving. The last picture shows still further improvement, but came in too late for publication.

266 Benefit Street.

ABSTRACT OF DISCUSSION

DR. ALBERT H. FREIBERG, Cincinnati: Many years ago I was associated as assistant with the late Dr. J. Wolff in Berlin, at the time when discussion of the law of the transformation of bones was going on. It had been the theory of many before this time, twenty-five years ago, that cases of adolescent scoliosis, particularly, were produced by some softening disease of bone, which they used also to explain other deformities such as flatfoot and coxa vara, which they considered akin to rickets. So they spoke of adolescent rickets. Wolff came back at them with the argument that they were unable to produce any tangible evidence of its existence, and they were not able to do so. It is not fair to assume that there is no such distinction as that between attitudinal or postural and structural scoliosis. To any one who has examined persons in the third or fourth decade of life who have had a short leg uncorrected, with a curve of the spine, disappearing entirely when in the recumbent position, showing the absence of any structural change, and especially to any one who has made roentgenograms of such patients, as I have done, and demonstrated that no structural changes had occurred, it seems to be impossible that we should hold longer the belief that no such distinction should be made. That the one condition may pass into the other must, I think, be assumed for the present, but that they are distinct conditions must also, I believe, be assumed. Of course the old views regarding adolescent rickets were expressed when we knew nothing of endocrine physiology. We know little enough about it now to be willing to say that it is possible to tell in any case whether it is the thyroid, the suprarenal or the thymus, or simply a disturbance of the endocrine balance, which is responsible for such changes in the bones, which we assume, after a study of physiologic experiments, to result sometimes, at least, from a disturbance

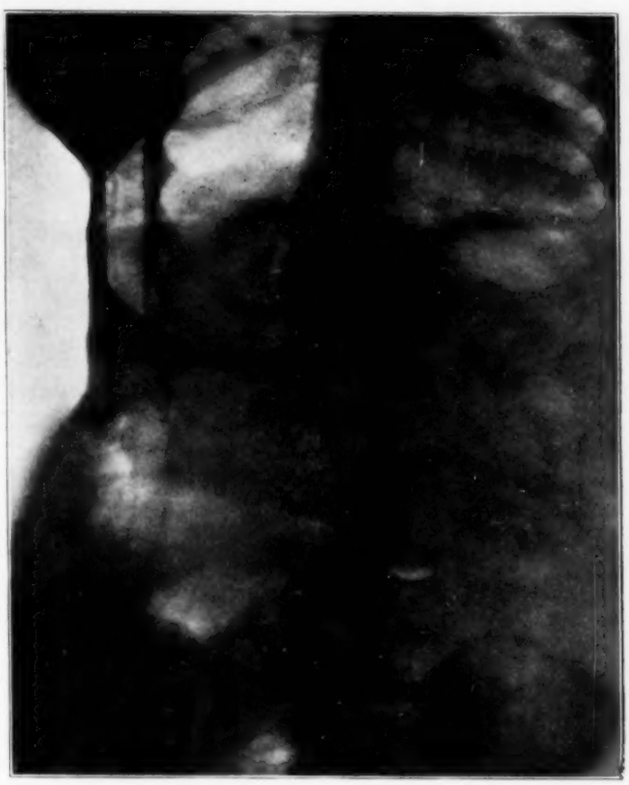


Fig. 5 (Case 4).—June 24, 1916; sixth jacket.

of the endocrine balance. I have had the experience, as many others have, of being surprised at a very marked difference in the response to treatment in physically similar cases of structural scoliosis. I have been unable to tell by the severity of the physical changes the degree in which the patient would respond to corrective attempts on my part. I have found

sometimes that comparatively slight deformities yield practically not at all, while at other times, rather severe deformity yields easily. It has been my assumption for some time, with a more or less theoretical basis, I will acknowledge, that the differences in these cases were to be explained by differences in that individual, as compared with others of similarly severe deformity, in the resistance of the tissues—perhaps not in the bone alone. I have for some time felt that in certain individuals there is probably a great disturbance of the whole endocrine balance that is to be considered in connection with the disturbance occurring at the time of puberty, and that these things may occur under similar circumstances at later periods in life. I should like to ask whether Dr. Peckham has reason to believe that there is any mechanical advantage in applying jackets with the patient face downward rather than face upward in a flexed position.

Dr. E. H. Arnold, New Haven, Conn.: I can do no better than to draw attention to the classification of deformities in Hoffa's book on orthopedics, which I think is serviceable at present. If he defines deformity as a change of shape in a bone or a joint, I think any or all of these symptom complexes must be scoliosis, if they are changes in direction of two bones. Therefore, there is no such thing as pseudoscoliosis, even in cases that show no change in bone structure. Hoffa classified the deformities into congenital and acquired, and divided both into contractures and weight deformities. Then you simply need to go down his list of contractures, section by section—skin, muscle tissue, nerve tissue, etc.—to find the particular kind. This classification covers a great many cases. I think it will throw light on a statement by Dr. Allen in regard to the possible use of scar tissue in holding a spine of the paralytic type; and it will help Dr. Hibbs and others in establishing the correctability of these cases by fusion, and also assist in the correction of weight deformities. These etiologic factors have always been, to me, the determining factors. If one has the symptom complex one must find the etiologic factor; and that has a great range in variety. We cannot always find out why bone softens. It sometimes softens from defects in the several internal secretions, and the deformities may be immense. Hoffa's table has always helped me to make the etiologic diagnosis. That, once established, leads to more intelligent treatment.

Fig. 6 (Case 4).—Condition of spine, April 16, 1917.

I also wish that Dr. Peckham would tell us how to apply these jackets. Dr. Abbott, some years ago, owing to some rather painful experience, changed his mind about the use of the heroic method of treatment. He told me that within one year he had changed from a corset that overcorrected markedly and was kept on for a long time, to one less heroic and more frequently applied, believing that the latter would give better results. I think that Dr. Peckham's is an attempt in that direction.

Dr. Royal Whitman, New York: I think scoliosis should be divided etiologically into many different classes. We all recognize the fact that certain weak individuals are predisposed to scoliosis and other postural deformities, but preliminary softening of the bone can hardly be a general cause. In order to support such a contention one must explain why five or six girls are affected to one boy. Also, why the deformity of scoliosis often increases in later years, long after any original softening of the bone has disappeared. Furthermore, all the postural deformities must be included. I am much interested in the paper quite apart from the question of etiology and should like to hear more of the details of the application of the jacket.

Dr. Virgil P. Gibney, New York: I should like to have Dr. Peckham say in closing what real evidence he has that the bones are softened.

Dr. Samuel Kleinberg, New York: The severity of the deformity affords no basis of judgment as to the outcome of treatment. We often see cases of mild rotation deformities that resist treatment for a long time and more stubbornly than the severe types. It seems to me that the long total curves are more amenable to treatment than the double curves, particularly the S-shaped curve to which I called attention some time ago. A curve with the dorsal deformity equal to the lumbar is difficult to correct by any known method. The types that have resisted all manner of treatment are the razorback deformity and those with congenital lesions. I have had twenty or twenty-five with congenital malformations of one or more vertebrae, and it is difficult to make any impression on them, even when the curve is very mild. When one has a malformation of the lumbar, or possibly the dorsal, vertebrae, it is impossible to make a serious impression on it. With the milder forms that have not existed a long time we not only can make an impression on the deformity, but correct it in great part by more than one method; not only by the Abbott method, but also by others; for instance, treatment in the erect posture. I have had some patients whom I have treated with jackets in the erect posture, in whom the deformity has become reduced and the patient improved as much as by the more severe method suggested by Dr. Abbott.

I should like to call attention to one type that has interested me, namely, the paralytic back. Paralytic scoliosis is often of a severe type. Can we gain a great deal by placing these patients on their back for a long time? I have recently had two patients who have improved a great deal. Both have been on their backs for six months, using corrective jackets, with a great deal of attention to the proper application of pressure over the deformity and allowing for expansion of the other side. I think it is a mistake to allow these patients to walk about.

Dr. James W. Sever, Boston: As a matter of fact, in the normal mechanics of the spine, as shown by the experiments carried out by Dr. Lovett, the dorsal spine in the flexed position increases very little in total length; but he has also shown that rotation is freest in the dorsal region when in the erect position and less in the flexed. The more the person is flexed forward, the more the spine is locked against rotation; and what is gained in the total length of the spine is very little. So I imagine that mechanically this position is largely an empirical one.

Dr. Frank E. Peckham, Providence, R. I.: The frame that I employ is the gas pipe frame, with cross strips of can-

vas placed between the sides and canvas going from one end of the frame to the other, so that the curve is kept tight. When the rotary pulls come it is easy to encircle the patient with plaster.

It appears to me as I perform my experiments that when the patient is laid down on a curved surface with the spine upward there is some lengthening and untwisting, simply from position; and if to that is added a rotary pull, more is accomplished. I hope this answers the question about the way of putting on the jacket.

It is rarely that bone softening is not found. We cannot, of course, cut these patients up in order to see how soft the bones are. I was interested to see a patient whose case I have reported straighten up on the administration of thyroid extract. There must have been something to cause restoration of form. Nature tries to grow a thing straight when it has a chance, and with restoration of normal physiology that was what took place. I had an interesting case in a little girl with a slight curve that absolutely resisted treatment. I could push it straight, but it would not stay. I gave her thyroid and she braced up immensely. Then she suddenly went to pieces physically and it was discovered that she had old roots in her gums. They were removed and she has braced up and done well since. Her spine is about straight, and is, I believe, on the road to permanent recovery. That was a mild case, but it was extremely resistant.

PAIN IN THE ARM: SUBDELTOID (SUBACROMIAL) BURSITIS

A FURTHER STUDY OF ITS CLINICAL TYPES, PATHOLOGY AND TREATMENT *

WALTER M. BRICKNER, M.D.
Fellow of the American College of Surgeons; Associate Surgeon, Mount Sinai Hospital; Captain, Medical Reserve Corps, U. S. Army
NEW YORK

The statement may appear bold, even to a gathering of orthopedists, that most of the cases of persistent

Fig. 1.—Large semifluid lime deposit beneath the bursa.

pain in the upper arm, so often treated for "rheumatism" and "neuritis," are surgical affections, at least in that they require mechanical treatment.

In the absence of arthritis or of symptoms in other parts of the body, the diagnosis of rheumatism, as an explanation of pain in the arm, is quite untenable, and need not detain us.

Brachial neuritis is a real condition but a comparatively uncommon one. When well established, it

Fig. 2.—Very small deposit near the supraspinatus insertion.

should be marked by motor, trophic or sensory signs, as well as by nerve tenderness. In all cases it is important to determine, by careful examination, including roentgenography, whether the neuritis is not simulated or produced by some other lesion. Pain in the left arm, usually referred especially to the flexor aspects of the elbow and wrist, may be associated with an anginal condition and, as such, may be symptomatic, among other things, of tobacco poisoning.

Of the surgical conditions, aside from grosser and more evident lesions, that cause pain in the arm, we must bear in mind cervical rib, fracture of the greater tuberosity of the humerus (which may occur from comparatively mild internal as well as external violence), spontaneously reduced luxation of the shoulder, subluxation[1] of the shoulder (either of which may be produced, in some persons, by slight violence), mild sprain of the shoulder, periostitis of various origin, and neoplastic and inflammatory diseases of the bones, especially the humerus (among which chronic bone abscess, cortical or medullary,[2] should be mentioned as an occasional cause of severe, persistent pain).

Far more common than any or all of these causes of pain in the arm and sometimes, but by no means always, also in the shoulder, is subdeltoid (subacromial) bursitis. It is, indeed, so often the cause of the complaint, that it should be thought of first.

In earlier communications[3] concerning the pathology, pathogenesis and operative treatment of subdel-

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Brickner, W. M.: Traumatic Forward Subluxation of the Shoulder: A Clinical Entity, Am. Jour. Surg., February, 1915.
2. Brickner, W. M.: Chronic Medullary Abscess of the Long Bones, Ann. Surg., April, 1917.
3. Brickner, W. M.: Prevalent Fallacies Concerning Subacromial Bursitis: Its Pathogenesis and Rational Operative Treatment, Am. Jour. Med. Sc., 1915, **149**, 351; Shoulder Disability: A Further Study of Its Varieties and their Treatment, Interstate Med. Jour., April, 1915; The Location and Cause of Lime Deposits Associated with Subacromial Bursitis: "Excision of the Bursa," Am. Jour. Surg., April, 1916.

toid bursitis, I presented the conclusions reached by several years of observation. These have been so much misquoted that I wish to restate and further elucidate some of them; and, especially, it is my purpose to describe the affection in its various clinical

Fig. 3.—Deposit in the supraspinatus tendon.

aspects, its nonoperative treatment and what I believe to be the indications for operation. I shall exclude from consideration the uncommon tuberculous and metastatically suppurative subdeltoid bursitides.

ETIOLOGY

Although a history of injury or of muscular violence is often unobtainable, I believe that the immediate cause of subdeltoid bursitis is traumatic, usually a squeezing of the supraspinatus tendon (occasionally the infraspinatus) and the bursa between the acromion process and the greater tuberosity of the humerus when the arm is abducted. This injury may, and often does, happen from a fall on the outstretched arm or other external violence. More often it happens from internal violence, as in raising the arm to beat a rug, hanging from a car strap, etc. This squeezing of tendon and bursa between the bony surfaces is easily demonstrable at operation or on the cadaver by abducting the arm. In operation in acute cases, recent hemorrhage into and tear of the tendon are plainly to be seen. Codman[4] reported three cases, and demonstrated, by operation in two of them, complete rupture of the supraspinatus tendon and tear of the bursal floor, from internal violence. Bucholz[5] also reported a case, likewise demonstrated at the operation.

Small fractures of the greater humeral tuberosity, which, as I have said, may also be produced by muscular violence, are probably also associated with inflammation of the overlying subdeltoid bursa (which accounts in part for peristence of the shoulder disability after this injury, if it is not treated, as it should be, by abduction). Indeed, the lesion is much the same as subdeltoid bursitis without fracture — in one case there is a tear of the supraspinatus tendon above its attachment, and in the other, a tear through its bony attachment.

I believe there is another etiologic factor, at any rate, as far as concerns the commonly, but by no means always, associated subbursal deposit of lime and other mineral salts in or on the supraspinatus (occasionally the infraspinatus) tendon. This factor is some metabolic predisposition to the deposit of these mineral salts. I am of this belief for the following reasons: As far as I know, subdeltoid buritis occurs only in adults (in my cases, between the ages of 20 and 61); it occasionally is encountered first in one shoulder, then in the other; in some persons the deposit (or deposits) undergoes absorption, in others it persists; although a common affection, many persons using their arm in the same way, and subjected to the same influences, never develop it; it occurs among the muscular and athletic as well as the sedentary and asthenic, in females as well as in males; no other hypothesis explains why in some persons, within a day or two after a mild internal violence or an external injury, the roentgenogram will reveal this characteristic deposition of lime above the greater tuberosity of the humerus.

I have reason to believe that subacromial bursitis is neither infectious nor toxic in origin. Tissue specimens removed at operation in acute as well as in chronic cases proved sterile. Even the sometimes liquid deposits often indistinguishable in appearance from pus contain no pus cells — only mineral salts, fat cells and detritus. Although in the acute stage there is sometimes a subfebrile elevation of tempera-

Fig. 4.—Deposit in the supraspinatus tendon.

ture, I have not found, in the more than 200 cases I have seen, any coexistent infection, nor have I been able to connect the lesion with any antecedent infection, tonsillar or otherwise.

I confess that my hypothesis of trauma and a biochemical predisposition as an explanation of subdel-

4. Codman, Ernest: Complete Rupture of the Supraspinatus Tendon: Operative Treatment with Report of Two Successful Cases, Boston Med. and Surg. Jour., 1911, **164**, 708.

5. Bucholz, C. H.: Therapeutic Exercise and Massage, Philadelphia, Lea & Febiger, 1917, p. 231.

toid bursitis and the subbursal lime deposit leaves much to be desired. What the metabolic fault is I have not learned. (It is a difficult laboratory problem.) Certainly there is no clinical evidence of gout. The occurrence of these lime deposits, and, indeed the

Fig. 5.—Very large, dry, caplike deposit, only partly in the tendon.

bursitis itself, have no exact analogue elsewhere in the body. It is a curious, and curiously common condition, and affords an interesting field for speculation and investigation.

PATHOLOGY

In all of the eighteen patients I have operated on, I found the same lesion in the bursa — adhesions between its two walls. These adhesions may be moderately long, or short and dense, gluing the two surfaces together over a limited area. They are always demonstrable if the operator is careful not to do what so many, I am sure, have done, namely, cut through the adherent floor and roof of the bursa with one incision. Beyond the area of adhesions, which is usually in the region of the greater tuberosity, the bursa can be freely entered with finger or instrument, and its free surfaces can be demonstrated. Here and there the bursal wall is sometimes thickened, but usually not much so. I have not encountered "villous" thickenings referred to in Codman's[6] article. Sometimes there is a small amount of serum. This I have found locked in the subacromial portion of the bursa by the adhesions below it, and it is liberated when these are divided. In most cases, I have found no fluid accumulation in the bursa. Probably there is always a serous effusion at the outset, but it usually soon disappears.

The lime deposit is not in the bursa, or in its walls. It lies under the bursa, either wholly within the supraspinatus tendon, or on it, or partly within and partly on it. The tendon may have to be split to reveal the deposit or deposits, or the calcareous mass may be plainly seen lying in the tendon. Occasionally the deposit is in the infraspinatus tendon. Sometimes it will be found scattered about on the periosteum in the neighborhood of the greater tuberosity. Irrespective of the severity of the symptoms, the deposit may be small or large, dry and gritty or semifluid, single or multiple, near the insertion of the tendon or at a considerable distance from the tuberosity (Figs. 1 to 6). In early cases, there may be plainly seen a small transverse tear in the tendon near its termination, and a hemorrhage into the neighboring tendon tissue. The histology of the tendon lesion and of the lime formation has been studied from my cases, and adequately described, by Moschcowitz.[7] The lime deposition takes place, it would seem, as a result of necrosis of tendon tissue.

It can be seen from Figure 7 why so many surgeons have felt sure that they found the lime in the bursa. If the two bursal walls, adherent over the deposit, are divided at a single incision, the surgeon, believing he has cut only through the outer wall or "roof," will expose the lime mass, unless it is concealed in the tendon; on removing this mass he will encounter the broad supraspinatus tendon, which he believes to be the inner wall of the bursa. If, however, the operator will lift up the outer wall with tissue forceps and incise it carefully, and then divide the adhesions between it and the bursal floor, he will find that he can explore the interior of the sac without encountering the deposit. The latter will not be exposed until he has then separately cut through the inner wall or floor of the bursa, and not even then if, as is very common, the deposits are quite within the tendon.

I would emphasize again that the lime deposit takes place, not slowly, but very speedily after the injury.

Fig. 6.—Multiple deposits in the supraspinatus.

In some cases it is slowly absorbed; in others it persists for years, perhaps for life. This, too, suggests some biochemical influence.

6. Codman, Ernest: Bursitis Subacromialis, or Periarthritis of the Shoulder Joint, Boston Med. and Surg. Jour., 1908, **159**, beginning October 22.

7. Moschcowitz, Eli: The Histopathology of Calcification of the Spinatus Tendons as Associated with Subacromial Bursitis, Am. Jour. Med. Sc., July, 1915.

SYMPTOMS

The symptoms of subdeltoid bursitis are two: pain, and disability in shoulder movements.

Pain is present in almost all cases. It is usually referred to the upper arm, anteriorly or externally,

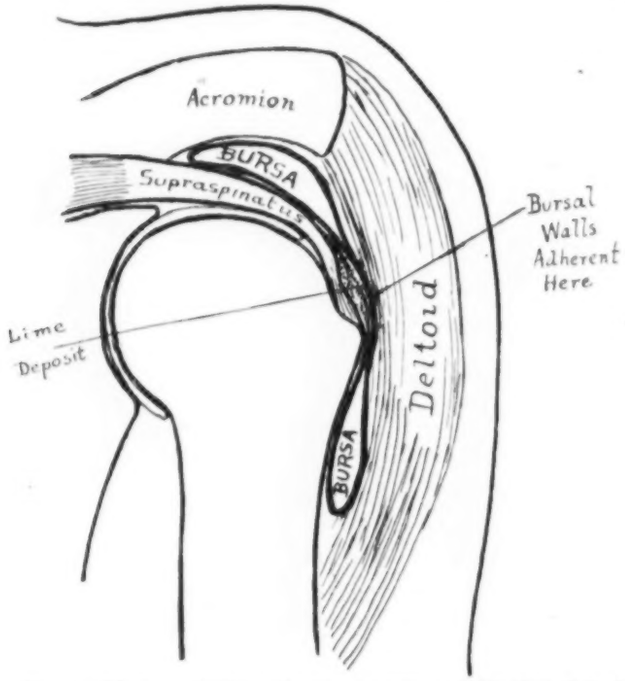


Fig. 7.—Diagram showing why many surgeons think they find the deposit in the bursa. Over the mass the two bursal walls are adherent and, unless separated by the operator, they are incised as one.

from the level of the deltoid insertion toward or to the elbow. Very often, but by no means always, it is referred also to the shoulder, usually its outer aspect. Sometimes it radiates into the forearm, the hand, the fingers or the neck. The pain may be fairly constant, or intermittent, or only on motion. Often it is worse at night.

Disability of movement may be entirely absent, especially in chronic cases. In the early stage, however, abduction, at least, is inhibited or painful. This movement and internal rotation are chiefly affected, but in varying degrees. The patient may be able to raise his arm only a little, or he may be able to abduct insufficiently to brush his hair. The interference with internal rotation may be very great or moderate; the patient may be unable to put his hand in his trousers pocket, or unable to reach behind his back, or unable to raise his hand on his back to the opposite scapula. External rotation is usually little affected; but sometimes is much inhibited. The arm can be swung backward and forward. There is no ankylosis.

PHYSICAL SIGNS

In the early stage there may be slight swelling due to serous effusion. In most cases, when the patient presents himself there is no swelling. On the contrary, there is often to be noted a flattening, due to atrophy of the deltoid. The supraspinatus and infraspinatus muscles may also be atrophied. Pressure on the bursa below the tip of the acromion process is sometimes painful, but it is usually painless. The only tender point that I find quite constantly is anteriorly, over the lesser tuberosity. When this point is very tender (comparison should be made with the opposite shoulder) it is fairly diagnostic in association with the symptoms described.

Roentgenography is important. If nothing is shown, it does not deny, rather it supports, the diagnosis of bursitis. If the shadow of a lime deposit is seen, however small it may be, the diagnosis is established beyond doubt.[8] Finally, the roentgenogram may show some unsuspected lesion, namely, syphilis or tuberculosis of the head of the humerus, or a small fracture of its tuberosity (the latter, as I have said, clinically the same lesion as supraspinatus injury and, like it, probably also having a bursitis associated with it).

CLINICAL FORMS

Codman's[6] classification into three types, "acute or spasmodic, subacute or adherent and chronic or nonadherent," is unsatisfactory from the anatomic side, for in all cases, acute or chronic, the pathology is, I believe, the same — an adhesive bursitis. We cannot recognize, therefore, a nonadherent and an adherent type, nor it seems to me, can we make a satisfactory distinction under the titles "subacute" and "chronic."

In my experience the cases present themselves in the following forms which, however, are not to be sharply separated: acute, "hyperacute," chronic, chronic with exacerbations.

In acute cases, pain and stiffness develop rapidly and reach a maximum in about three days. The pain is quite severe and constant, and subsides little or not at all at night. The arm can be only slightly abducted without great pain. There is spasm of the shoulder muscles, increased by attempted abduction or internal rotation, active or passive.

Fig. 8.—My easily regulable method of automatically restoring abduction in the treatment of shoulder disability.

The term "hyperacute" I use to indicate not so much the rapid development of the symptoms as their severity. The pain is very great. The patient hugs his

8. Occasionally the tendon lesion exists without an overlying bursitis, but the symptomatology and treatment are the same.

arm to his chest, and the slightest attempt to raise it causes severe spasm. There is a rapid development of atrophy of the deltoideus and the spinati. Radiation of the pain into the fingers, with this atrophy, may deceive even a neurologist into the diagnosis of brachial neuritis. Indeed, the early appearance of atrophy of these three muscles suggests that there may be some associated localized neuritis; disuse for a short period seems not quite sufficient to explain it.

In both the acute and the "hyperacute" forms, tenderness at the point I have described is exquisite.

Acute subdeltoid bursitis may gradually subside completely. More often it passes into the chronic form.

Chronic subdeltoid bursitis begins in the acute form, or is of the same severity throughout. The pain is often annoying rather than unendurable. It may be quite intermittent, varying in severity. Often it is present only on certain motions (as in pulling on an overcoat sleeve, or attempting to comb the hair). Abduction may be limited to 45, 90 or 130 degrees; internal rotation may be much or little retarded. Passive movements are usually a little freer than active. External rotation is sometimes limited. In many cases the movements are perfect, but usually they are then more or less painful. Tenderness on pressure over the lesser tuberosity is usually present and often great. There may or may not be atrophy of the deltoideus and spinati.

This chronic form persists for months or years. Usually it subsides, with or without treatment, sometimes in spite of certain treatments. The lime deposit, if there is one, may gradually disappear completely.

The "chronic form with exacerbations" is of those cases, lasting for years, in which there is often a recession of symptoms, more or less complete, for long periods, but in which every few weeks or few months there is a severe exacerbation in which the symptoms approach those of the acute or even the "hyperacute" form.

TREATMENT

I am not inclined to place much confidence in electricity, baking, violet ray, internal medication or even massage. It is true, no doubt, that patients have recovered, by reason of such measures, or in spite of them. On the other hand, most of the patients referred to me have abandoned these treatments because their symptoms were unrelieved or even aggravated by them.

My first object, in the management of subdeltoid bursitis, is to overcome the abduction disability, the spasm (if there is any) and thereby, to a large extent, the pain. This I do by a simple automatic abduction method elsewhere described.[9] I put the patient to bed supported on several pillows and with his arm raised as far as he comfortably can abduct it. A towel or bandage sling is passed from the wrist or elbow to the head of the bed, and this end of the bed is raised on blocks or chairs (Fig. 8). It will often be noted that as soon as the patient is comfortably recumbent he can abduct his arm more than when standing. As he gradually slides down in bed his arm correspondingly goes up; and it is no rare experience in a patient who has not abducted his arm more than 45 degrees in many months to find it thus fully and painlessly abducted in twenty-four hours. Usually it takes a few days longer. If the patient cannot sleep with his arm in this sling, or cannot maintain that position continuously, he may intermit this gradual traction. Codein and acetyl-salicylic acid are helpful aids in overcoming the pain the first day or two. When passive abduction is thus fairly secured, active abduction is restored with it, and the pain soon disappears also in most cases. The abduction is maintained, and internal rotation is secured by after-treatment with Indian club exercises.

This plan of treatment is equally applicable to acute, "hyperacute," and chronic cases. It is of little or no value in chronic cases with no loss of motion. These cases, in which pain is the only symptom, are, in my experience, the most difficult to cure. Fortunately, the patients usually recover spontaneously.

I have come to the belief that most patients who have subdeltoid bursitis recover under this plan of treatment in bed with automatic abduction, or the trouble subsides spontaneously, though slowly. There are some, however, that do not thus recover and some that, though they may eventually do so, meanwhile suffer so much pain, loss of function and interference with occupation that operation is to be recommended as a means of prompt cure. I would therefore advise operation in the following cases: 1. In the chronic form with exacerbations. These patients have been through all sorts of treatment for years; their sufferings during the periods of exacerbation are severe; they show no tendency to spontaneous recovery. 2. In acute, "hyperacute" and chronic cases in which the automatic abduction in bed fails to restore function and to relieve pain and spasm.

The operation I employ I have previously described.[10] In consists in: splitting the deltoid; raising the outer wall of the bursa from the inner and incising it; dividing all adhesions in the bursa; incising and retracting the floor of the bursa; removing the deposit, if extratendinous, and suturing any tear in the supraspinatus tendon; or incising the tendon wherever indicated by the roentgenogram and excising the deposits with surrounding tendon fibers, and reuniting the tendon with chromicized catgut (if the defect is not too large); suturing the floor of the bursa with a fine running catgut stitch; anointing the interior of the bursa with a thin layer of petrolatum; suturing the outer wall of the bursa; suturing in layers, without drainage, the deltoid muscle, the deltoid fascia and the skin; abducting the arm in plaster of Paris for about a week.

The petrolatum may not be important. The reconstruction of the bursal walls is not essential, but it aims at an anatomic operation. The abducted position is also not essential, but I believe that it shortens the after-treatment, which consists in Indian club exercises and other devices to restore internal rotation and full abduction.

All the patients thus operated on have been promptly relieved of pain and early restored to full activity. In only one patient, a physician, was there any complication — a brachial phlebitis which retarded his recovery a few weeks.

In one case of chronic bursitis without any lime deposit, in which the pain and disability continued, with exacerbations, for years, division of the adhesions and abduction for one week were followed by permanent cure. This is the only case without lime deposit in which I have operated. It illustrates, first,

9. Brickner, W. M.: A Simple Easily Regulable Method of Applying Abduction in the Treatment of Shoulder Disability, Med. Rec., New York, Jan. 2, 1915.

10. Brickner, W. M.: Footnote 3, first reference.

that the roentgenogram of a deposit is not essential to a diagnosis of subdeltoid bursitis and, second, that division of the adhesions (and placing petrolatum in the bursa) will effect a cure when conservative measures fail, even in the absence of the lime mass.

30 West Ninety-Second Street.

ABSTRACT OF DISCUSSION

Dr. Eli Moschcowitz, New York: [Dr. Moschowitz demonstrated lantern slides made from specimens of portions of supraspinatus tendons submitted by Dr. Brickner for pathologic examination.] The lesion is a tendonitis, characterized by necrosis or hyaline degeneration of the tendon with secondary calcification, and a reactive granulation tissue around these areas of necrosis or calcification. The morphologic changes parallel the duration of the disease; thus, in long standing cases abundant scar tissue is present, while in early cases the granulation tissue is richly cellular. I believe that the necrosis was due to actual death of tendon tissue and was not of hemorrhagic origin because blood pigment was entirely absent. The necrosis is, in all probability, due to cutting off of the meager blood supply of the tendon consequent on the trauma. Calcification inevitably follows in those portions of the tendon that have undergone necrosis or hyaline degeneration. This is the usual consequence in other tissues of the human frame. The remarkable feature is the early incidence of the calcification. We are accustomed to think of calcification as occurring only after the tissue has been dead for some time, but in the cases that Dr. Brickner reports calcification occurs as early as forty-eight hours after the onset of symptoms. The only possible explanation of this early calcification is found in the results of the experiments of Litten and Schujeninoff, who found lime twenty-four hours after traumatic necrosis of the kidney and muscle, respectively. Perhaps the peculiar predilection to early calcification may be due to certain biochemical products in the tendon itself (collagen?).

Dr. J. Bion Bogart, Brooklyn: I want to say a word from the standpoint of one who suffered for four and a half years and has not been cured. Four and a half years ago I had a surgical infection through the index finger which resulted in metastatic infection of the shoulder joint and which was opened and drained and afterward had extension for four weeks. I was able to work after that, though I still have limitation of motion in the joint, but not ankylosis. My chief symptom, in addition to limitation of motion, is pain, which is not present except on motion or pressure. One of the most serious difficulties that I labor under is inability to turn on my left side to sleep at night. I cannot lie on that shoulder because the pressure causes too much pain. When I raise my arm it causes pain, which runs down the arm.

In my own case, so far as I know, there was no injury. I think that the same infection that caused the metastasis to the shoulder joint produced the bursitis, which was not, however, recognized at the time. Following recovery from the early symptoms, I had treatment with baking and massage for two months, after which I gave it up, because I did not gain anything in motion and the treatments were followed by pain. This kind of treatment did not seem to do me any good, but harm, if anything. I have done nothing since for the last four years. I was roentgen rayed at the time of my infection, and since then, a year and a half ago. The gentleman who did it later, Dr. Wasch, is here. There was no calcareous deposit then, and, so far as I know, there is none now.

Now what is it that causes my pain? I have none when the arm is at rest, but only on pressure or motion. If adhesions cause it in the cases in which there are no deposits, I think they are sure to be reformed after operation; and I do not see how relief can come from the operation in such cases as mine. I do not see, either, how relief could come from forcible stretching of the arm upward. It cannot be done immediately, but only gradually; but, as the scapula moves with the arm, I do not see how benefit could come in that way.

Dr. Fred J. Fassett, Seattle: Have any of those present seen the very rapid disappearance of these lime deposits? I have seen one case, reported by Dr. Risley of Boston, and also one of my own, in which the disappearance of the calcification was so rapid as to cause a question as to the authenticity of the plates.

Dr. Milton G. Wasch, Brooklyn: I have been fortunate enough to have made roentgenograms in a great many of these cases. Within the last six months I have seen twenty-five. It has always been my custom to make roentgenograms of the opposite shoulder for comparative study, and I have been surprised, in a good many cases, to find lime salts in the opposite shoulder, in which the patient had not complained of any symptoms either at that time or previously. I, therefore, feel that the statement that deposits of lime salts form in one or two days is doubtful. I think when the patient complains of symptoms due to subacromial bursitis the probability is in most cases that the calcium has already been deposited and that the condition and suffering are from an acute exacerbation of a chronic calcifying bursitis.

Dr. Willis C. Campbell, Memphis, Tenn.: I should like to emphasize a point that Dr. Brickner made in his paper, that mild trauma is the frequent cause of this condition; and also that this injury may be overshadowed when other parts are seriously damaged. I had such a case in a young man. The injury was received in an automobile accident and he did not recognize the trouble in his shoulder for six weeks. By that time there was beginning atrophy. I did not see him for six months after the accident; then there was extreme atrophy and considerable trophic disturbance in the arm with abduction totally limited. Relief was soon given by simple abduction in a plaster cast, followed by massage, etc.

Dr. Heinrich Wolf, New York: I have had occasion to treat a few hundred cases of subacromial bursitis and should like to know what stand Dr. Brickner takes now regarding the infectious origin of some of these cases. We know that a great many are traumatic.

With particular reference to the remarks of the last speaker, I would say that I have noticed a great many cases following Colles' fracture of the wrist. If a patient falls on his hand and gets a fracture of his wrist, the pain in his wrist is so severe that he neglects a probable slight injury in the shoulder joint. I have seen about twenty cases of this in the dispensary of the Mount Sinai Hospital, in which subacromial bursitis developed five or six weeks after the injury to the wrist.

Then I have seen patients get a similar condition after infectious conditions in the hands. I cannot explain in what way an infection in the hand can be followed by subacromial bursitis, but I have seen it too often to consider it an accident. I hope that Dr. Brickner will be able to answer this question, particularly about the infectious condition. I have seen lately quite a number of cases of acute bursitis in which I was positively able to trace it to infection in the teeth. I know that Dr. Brickner does not believe that this is possible; but I mean, of course, only a certain number of cases. I want to say that I have seen other etiologic factors, but that in these particular cases removal of the teeth relieved the pain.

Dr. John Dunlop, Washington, D. C.: In some cases with a lime deposit in which operation was performed I found absolutely no adhesion. I should like to ask Dr. Brickner whether he considers that all cases of lime deposit have subacromial bursitis. I think in most cases they are quite separate conditions.

I believe there is nothing in Dr. Brickner's exposition, other than what Dr. Codman brought out in his paper in 1908. I have seen four cases of such deposits, in one of which operation was performed. In the first three cases that I saw operation was refused. I put the arm up in the abducted position and the patients got as well as any other cases of subacromial bursitis that I have seen. The fourth case was in a man who had so much pain that half a grain of morphin every four hours would not quiet him. I tried to put his arm up in the abducted position under nitrous oxid anesthesia. This increased the pain so markedly, however, that I operated. Dr. Brickner showed that he found adhesions.' I found no adhesions in this case. I cut down to the bursa and

demonstrated it to be as large, as Dr. Codman explained, as the palm of the hand. I saw the white mass shining through the base of the bursa and cut down on this and was able to scoop it out with a spoon. It was of the consistence of a soft toothpaste and quite white. I sent it to the laboratory of the Army Medical School and hoped to get a report on it from there; but it was lost. I did, however, get a negative bacteriologic report. I passed a probe well up within the sheath of the supraspinatus muscle and was sure that I was within it. The lower and upper surfaces of the bursa were closed and the man got a perfect functional result.

The day after I heard Dr. Brickner read his paper I had a case in an officer in the Marine Corps who refused operation. I put his arm up in abduction and he got well. Later, he had symptoms in the other shoulder, of which I had not made roentgenograms when I operated on the first shoulder. I treated that, and he got so well that he now plays tennis and golf every day. He still has the deposit in the shoulder, eighteen months after the diagnosis was made.

I do not agree with Dr. Brickner that these deposits occur within a few hours. We have no evidence that they do, for we do not take roentgenograms of our patients before. I think the symptoms come on from some trauma due to the deposit which may have been there for weeks, months or years before. It seems to me, from my four cases, in three of which there was no operation, that these patients will get well without operation.

DR. WALTER M. BRICKNER, New York: Dr. Dunlop reports that he found a lime deposit in the tendon in a case in which there were no adhesions in the bursa. That does occur. I referred to it in an earlier paper as "calcareous tendinitis without bursitis." I do not wish to claim anything that belongs to Codman, who was the first to suggest, in three cases, that the deposit is under the bursa. He speaks of it, however, as wenlike and cystlike, which it is not; and the conception of it as being often wholly within the tendon was not brought forth by Codman.

Concerning the rapid formation of the deposit, you are right in questioning my statement. The deposit may have been there before the symptoms called for a roentgenogram, but I have, not only once, but several times, found patients who, two days after a fall on the shoulder, or a lurch of the body while hanging to a car strap, showed this deposit in the picture, patients who never previously had any symptoms, but who had the characteristic symptoms after the injury. In one such case, "hyperacute," I operated a few days after the injury. The deposit had been shown by the Roentgen ray three days after the injury. I found a fresh tear in the ecchymosed supraspinatus tendon, and the lime deposit in the tear and in the surrounding bruised tendon tissue. Whether I am right in the assumption of very rapid lime formation, I am willing to leave open. I have not seen rapid disappearance of the deposit. I have seen it occur within two to six months, but not earlier.

I believe that I have fully answered Dr. Wolf's question. Occasionally one encounters metastatic suppuration in the bursa in connection with a septic process; but I believe that the cases of subdeltoid bursitis of which we have been speaking are not infectious in origin. Sometimes a man reports an isolated case in which the patient had tonsillitis previously, and then he jumps to the conclusion that the tonsillitis was the cause of the disease. That is unscientific.

I hope that I have made it clear that these patients often get well without operation.

School Medical Inspection and Local Government.—Were it not for the fact that the Cumberland schools and the county schools are one unit, we might be able to see our way clear to establish medical inspection of schoolchildren, but this cannot be under the present system of one school unit for the entire county. Ample laws now exist that would enable the county school commissioners to establish this inspection, but somehow or other, as with all other advanced movements, some public bodies are slow to comprehend their value. We urge all parents to advocate medical inspection for the sake of their children.—*Health Bulletin*, Cumberland, Md.

THE USE OF BAKERS' YEAST IN DISEASES OF THE SKIN AND OF THE GASTRO-INTESTINAL TRACT *

PHILIP B. HAWK, PH.D.
FRANK CROZER KNOWLES, M.D.
MARTIN E. REHFUSS, M.D.
PHILADELPHIA
AND
JAMES A. CLARKE, M.D.
NEW YORK

WITH THE COLLABORATION OF OLAF BERGEIM, PH.D., H. RODELL FISHBACK, M.D., SC.D., CLARENCE A. SMITH, PH.D., AND ROBERT A. LICHTENTHAELER, M.S.

That yeast possesses curative properties was appreciated in the olden times. Hippocrates recommended its use in leukorrhea, and the monks used it for the treatment of plague. Not until the middle of the nineteenth century, however, did the medical profession look favorably on its use. About that time, it was used successfully in furunculosis, anthrax and diabetes.

TABLE 1.—CLASSIFICATION OF NINETY-ONE DIFFERENT CASES IN WHICH THE YEAST TREATMENT WAS USED

Type of Case	Number
Normal	15
Furunculosis	17
Acne vulgaris	17
Acne rosacea	8
Constipation	10
Gastro-intestinal catarrh	3
Intestinal intoxication	1
Eczemas	5
Arthritis deformans	1
Psoriasis	4
Erythema and urticaria	1
Bronchitis	2
Urethritis	2
Pruritus	1
Folliculitis	1
Conjunctivitis	1
Duodenal ulcer	1
Swollen glands	1
Total	91

Later it was shown to be effective in diseases of the skin, suppurative processes, diseases of the respiratory passages, gastro-intestinal diseases, vaginitis, general infectious diseases, etc. In fact, for an interval of many years yeast was used as a curative agent in a long list of widely differing disorders. Then came a reaction, and yeast was used comparatively little by the medical profession during the latter part of the nineteenth century.

In 1899 the researches of Brocq[1] emphasized anew the therapeutic importance of yeast, and from 1900 to 1907 many important contributions were made to the subject of yeast therapy. For the last ten years, however, comparatively little attention has been paid to the use of yeast in medicine.

Owing to the fact that the great majority of the yeast researches have been carried out with brewers' yeast or various dried yeast preparations, and since several investigators have asserted that bakers' yeast was not a satisfactory therapeutic agent, we have thought it of importance to make a comprehensive study of the curative value of ordinary bakers' yeast,

* From the Laboratory of Physiological Chemistry of Jefferson Medical College, the Philadelphia General Hospital, and the Roosevelt Hospital, New York.

1. Brocq, A. J. L.: Presse méd., Jan. 28, 1899, p. 45.

since that is the most available kind. In all of our tests we used Fleischmann's Compressed Yeast, as that is the best known and most widely used of bakers' yeasts. The fresh yeast was used in all cases, a new supply being secured from two to three times a week and kept in the refrigerator until used.

TABLE 2.—SUMMARY OF RESULTS IN THE SERIES OF CASES

Condition	Number of Cases	Improved or Cured
Furunculosis	17	16
Acne vulgaris	17	17
Acne rosacea	8	8
Constipation	10	9
Gastro-intestinal catarrh	3	3
Intestinal intoxication	1	1
Eczemas	5	0
Arthritis deformans	1	1
Psoriasis	4	1
Erythema and urticaria	1	1
Bronchitis	2	2
Urethritis	2	2
Pruritus	1	1
Folliculitis	1	1
Conjunctivitis	1	1
Duodenal ulcer	1	1
Swollen glands	1	1
Totals	76	66

The literature of the yeast question is so voluminous that we make no attempt in this connection to give a comprehensive survey of previous work. Our main purpose is to present a brief summary of the cases we have studied. Those who are interested in the literature of the subject we would refer to Lardier,[2] Krause[3] and Hedrich,[4] in whose articles a very full bibliography will be found.

We have made a study of ninety-one cases, which have been classified as explained in Table 1. We made tests on normal persons to learn the action of yeast in the stomach when given suspended in water, beef tea or orange juice, with meals or between meals. We also studied the comparative effect of living and dead yeast. The yeast was killed by treating it with boiling water for a few minutes. All stomach examinations were made by means of the fractional method.[5]

From these tests it is apparent that yeast may be administered satisfactorily either with meals or on the empty stomach. It is also apparent that killed yeast (that is yeast placed in boiling water for a few minutes) acts much the same in the stomach as living yeast. If the patient is troubled with gas formation it is preferable to use killed yeast, or to administer living yeast between meals.

These tests also demonstrated conclusively that yeast is not readily destroyed in the human stomach, but that on the contrary, especially when taken between meals, a large part of the yeast passes into the intestine in the living condition. Hence, it is possible that in certain disorders, especially those involving constipation, the living yeast has a more pronounced action than dead yeast.

From Table 2 it will be seen that yeast treatment gave the best results in furunculosis, acne vulgaris, acne rosacea and constipation. The treatment was also useful in acute bronchitis, urethritis, conjunctivitis, swollen glands, folliculitis, gastro-intestinal catarrh, intestinal intoxication, arthritis deformans and duodenal ulcer. The laxative effect of the yeast was observed in cases other than those of constipation. In fact, in some instances the laxative effect was so pronounced that it was necessary to reduce the dosage. Both the fresh yeast and that killed by boiling water

2. Lardier, Jean: Thèse de Paris, 1901-1902.
3. Krause, P.: Therap. d. Gegenw., 1904, **45**, 101.
4. Hedrich, K.: Deutsch. Aerzt. Ztg., 1904, **49**, 75.

5. Rehfuss, M. E.: Gastro-Intestinal Studies: The Question of Residuum Found in the Empty Stomach, THE JOURNAL A. M. A., July 4, 1914, p. 11. Hawk, P. B.: Practical Physiological Chemistry, Ed. 5, Philadelphia, P. Blakiston's Son & Co., 1916.

TABLE 3.—REPORTS OF CASES OF FURUNCULOSIS IN WHICH THE YEAST TREATMENT WAS USED

Case, Sex and Age	Complaint	Treatment	Results
16— F —22.....	Series of deep-seated boils for over two months; five lanced in one week.	Five injections of vaccine.	No effect.
		One-half cake yeast t. i. d. after meals.	Almost immediate improvement; cure in two weeks.
17— F — *.....	Several large boils, which did not yield to vaccine.	Three cakes daily for two weeks.	Boils disappeared.
	Boil started on leg after yeast was stopped.	Yeast resumed.	Boil soon cured.
18— M —38.....	Succession of boils; many on back of neck, several on body; one carbuncle.	One-half cake t. i. d. after meals; arsenic internally.	All cleared up; patient has increased in weight.
19— M —42.....	Disease present several years; six small boils in six weeks.	Three cakes daily before meals for seven days.	Boils cleared quickly.
20— F — *.....	Large boil draining on face; one just coming to a head.	Three cakes daily before meals for two weeks.	Cured; no more appeared
21— F —26.....	Boils a week apart for about two months; when treatment started, one on neck and one on wrist.	Three cakes daily before meals for two weeks.	Both healed; no more in four weeks.
22— M —33.....	Carbuncle treated surgically; later boils developed.	One-half cake t. i. d. after meals.	Cured; eructations and looseness of bowels after yeast.
23— M — *.....	Boils on buttocks for period of nine months.	Three cakes daily before meals for two weeks.	All boils healed.
24— M — *.....	Nine large boils during a period of about two years.	Three cakes daily before meals for six weeks.	Felt much better; no recurrence.
25— M —25.....	Five boils in two months.	Three cakes daily before meals.	Boils soon subsided; no recurrence.
26— M —42.....	Stye in left eye; boric acid treatment four days with no improvement; patient subject to this trouble.	One-half cake dead yeast t. i. d. before meals next four days.	Cure more rapid than ever before noted.
27— M —20.....	Boils periodically for several years; large one on right buttock lanced after ten days and yeast treatment started.	Three cakes daily before meals for three weeks.	Healed quickly.
	Two weeks after first boil healed a much smaller one appeared on abdomen.	Yeast continued.	Cured quickly; no recurrence after four months.
28— M —25.....	Troubled with boils for several months; large one on back of neck.	Three cakes daily before meals for three weeks.	Boil disappeared.
29— M —52.....	Boils periodically for years; two large ones on neck.	Two cakes dead yeast daily.	Boils disappeared.
30— M —24.....	Troubled with boils at short intervals for several years; large boil in left axilla lanced after one week and yeast treatment started.	Three cakes daily before meals for one month.	Boils cleared rapidly; second small one failed to head; no recurrence in four months.
31— M —26.....	Boils at intervals for some months; several dozen large ones on different parts of body, usually not more than two or three at a time.	One cake t. i. d. after meals for three weeks.	Boils continued to appear.
32— M —50.....	For three months had not been free of boils, most of which were of hazel-nut size.	One cake t. i. d. after meals for four weeks.	Boils stopped appearing after one week; no recurrence in six weeks.

* Adult.

TABLE 4.—CASES OF ACNE VULGARIS TREATED WITH YEAST

Case, Sex and Age	Complaint	Treatment	Results
33— M —21.....	Disease had been present for nearly two years; deep-seated papules and pustules covering practically entire face.	Zinc sulphate and potassium sulphid with laxatives. Above treatment and one cake yeast t. i. d. after meals.	Only very moderate improvement. At end of two weeks lesions almost entirely dried up; at end of four weeks no active lesions; no new spots in two weeks.
34— F —22.....	Moderate case, chiefly papular type, of two years' duration.	Boric acid locally for some weeks; then one cake t. i. d. for three weeks.	More improvement in ten days with yeast than in one month local applications; no active lesions in one month.
35— M —20.....	Moderate eruption, mostly papular, during one year.	One cake t. i. d. for three weeks.	Active lesions disappeared.
36— M —23.....	For four years, a marked case with numerous pustules and papules.	One cake t. i. d. for four weeks; boric acid locally.	Marked improvement.
37— M —25.....	For five years, numerous deep papules and pustules.	Zinc sulphate and potassium sulphid locally; one cake t. i. d. for four weeks.	Marked improvement.
38— F — *.....	Moderate eruption on face for one year.	Three cakes daily before meals for three weeks.	Marked improvement; face clear when last seen some weeks later.
39— M —42.....	Slight eruption on back and abdomen for about one month.	One-half cake dead yeast t. i. d. before meals for seven days.	Eruption disappeared.
40— M —21.....	Moderate eruption for two months.	Three cakes daily before meals for two weeks.	Eruption cleared.
41— M —19.....	Numerous pustules and papules on face and body for five years.	Three cakes daily before meals for three months.	Improvement rapid; marked improvement after three months.
42— M —20.....	Acute eruption.	Three cakes daily for two weeks.	Eruption disappeared; no recurrence.
43— M —21.....	Pronounced case of five years' duration.	Two cakes daily for four weeks.	Eruption cleared; began to return one month later.
44— M —23.....	Marked eruption on face and body for three years.	Two cakes daily for four weeks.	Eruption disappeared, but returned one week after yeast was discontinued.
45— M —21.....	Very moderate eruption on cheeks and chin for one month.	Three cakes daily for four weeks.	Eruption disappeared.
46— M —22.....	Moderate eruption on cheeks for two months.	Three cakes dead yeast t. i. d. before meals for two weeks.	Eruption entirely disappeared.
47— M —24.....	Moderate eruption, chiefly papular, during several years.	Three cakes daily before meals for two months.	Eruption disappeared in two weeks; no recurrence.
48— M —21.....	Moderate eruption on face and body during three years.	Two cakes daily before meals for five weeks.	Cleared almost completely in four weeks.
49— M —20.....	Case of long standing with some indurated follicles; local sulphur treatment had yielded no results.	One-half cake t. i. d. after meals.	Unquestioned improvement; no other medication or change of diet.

* Adult.

TABLE 5.—RESULTS OF YEAST TREATMENT IN ACNE ROSACEA

Case, Sex and Age	Complaint	Treatment	Results
50— M —50.....	Typically marked case of fifteen years' duration; numerous large red papules, congested arterioles, and bright red nose.	One cake yeast t. i. d. after meals for four weeks.	Improvement in few days; nose and cheeks normal in color in four weeks except for arterioles; papules gone.
51— M —45.....	Marked case of ten years' duration; numerous bright red, deep-seated papules; scarlet nose, cheeks and forehead.	Boric acid locally; one cake yeast t. i. d. after meals for four weeks.	Lesions cleared; redness disappeared in three weeks; unusually quick result.
52— F —40.....	Marked case of five years' duration; chiefly papules with considerable congestion of nose and face.	Boric acid locally; one cake t. i. d. after meals for three weeks.	Improved in a few days; practically cleared in ten days.
53— M —35.....	Moderate case of three years' duration.	One cake t. i. d. after meals for two weeks.	Skin normal and lesions gone in two weeks.
54— F —30.....	Moderate case of two years' duration; typical papules, congestion, and few pustules.	One cake t. i. d. after meals for three weeks.	Face cleared in less than two weeks.
55— M —35.....	Moderate case of three years' duration; typical papules, a few pustules, bright red nose, cheeks and forehead.	One cake t. i. d. after meals for three weeks.	Lesions cleared in two weeks' time.
56— F —38.....	Marked case of eight years' duration; numerous papules and pustules, scarlet nose, red cheeks and forehead.	Boric acid locally; one cake t. i. d. after meals for four weeks.	Markedly improved.
57— M —52.....	Bright red nose for several years.	Two cakes daily for four weeks; living yeast at first, dead yeast later.	Marked improvement.

TABLE 6.—THE SUCCESS OF YEAST TREATMENT IN CONTROLLING CONSTIPATION

Case, Sex and Age	Complaint	Treatment	Results
58— F —46.....	Slight constipation for a few weeks.	One-half cake dead yeast t. i. d. before meals for one week.	Movements so frequent yeast was discontinued.
59— F —26.....	Mild case of chronic constipation of several years' duration.	One-half cake dead yeast t. i. d. for ten days.	Much improvement.
60— M —48.....	Chronic constipation for a year or more; receiving three compound cathartic pills daily to regulate bowels.	Three cakes yeast daily before meals.	Movements became regular without other medication.
61— M —52.....	Mild constipation for several years.	Two cakes daily before breakfast and dinner for four weeks.	Living yeast regulated well, killed yeast did not.
62— M —21.....	Slight constipation for a few weeks.	Two cakes daily before meals for a month.	Regular movements from the start of yeast.
63— M —24.....	Constipation for several months.	Three cakes daily before meals.	Regular movements soon occurred.
64— M —21.....	Mild constipation.	Two cakes daily for five weeks.	Regular movements soon and remained so after yeast was discontinued.
65— F —69.....	Constipation for several years.	Three cakes daily for several days.	Regular movements in two or three days.
66— M —20.....	Constipation for several years with periodic headache.	Three cakes daily before meals.	Regular in four or five days; general physical condition improved.
67— F — *.....	Subacute appendicitis, high intestinal stasis, and constipation.	Yeast and dietary measures.	No relief from constipation; appendiceal condition worse.

* Adult.

showed laxative power. In one case the patient became constipated under yeast treatment.

So far as gastro-intestinal conditions are concerned, it is apparent that yeast has its greatest usefulness in conditions accompanied by cutaneous manifestations.

It seems to us that yeast is essentially indicated in chronic nonobstructive bowel conditions and contra-indicated in the acute conditions.

Whether the success of yeast in acne vulgaris and acne rosacea is due alone to its laxative action or to some fixed effect on the intestinal tract, we are unable to say. The preparation was laxative in all these cases, in two so much so that a half dose was given for a few days. There was considerable gas formation, but no complaints were made on this score.

In furunculosis, yeast is a remarkably efficacious remedy. Its curative action in these cases is no doubt aided by the leukocytosis which is developed.

TABLE 7.—CASES OF GASTRO-INTESTINAL CATARRH TREATED WITH YEAST

Case, Sex and Age	Complaint	Treatment	Results
68— F — *.....	Chronic gastro-intestinal catarrh, stubborn, and of several years' duration.	Lavage, applications of silver, dietary measures, one-half cake yeast t. i. d.	Bowel condition improved; slight increase in gastric hydrochloric acid.
69— M —35.....	Ethmoidal sinus disease, gastric and intestinal catarrh, intestinal stasis, and constipation.	Low protein diet, magnesium perhydrol, nose and throat treatment; one-half cake at first, then one-quarter cake t. i. d.	Bowel condition improved; catarrhal tendency lessened; movements more complete.
70— M — *.....	Chronic gastric catarrh, low grade catarrh of the colon, chronic constipation, and tinnitus aurium.	Dietary and local treatment gave improvement; one-half cake t. i. d. added.	Definite improvement in ringing of ears and bowel condition.

* Adult.

TABLE 8.—YEAST TREATMENT IN FIVE CASES OF ECZEMA

Case, Sex and Age	Complaint	Treatment	Results
71— M —35..... 72— F —30..... 73— M —45..... 74— F —40..... 75— M —48.....	All five were extensive, long standing cases, papular, papulo-vesicular, vesicular, or rubrum in type.	Petrolatum locally with three cakes of yeast daily was the treatment in all of these cases.	No improvement although yeast was given in some cases for four months.

TABLE 9.—RESULTS OF YEAST THERAPY IN THE TREATMENT OF PSORIASIS

Case, Sex and Age	Complaint	Treatment	Results
76— M —12.....	Typical case of two years' duration; general distribution with lesions mostly the size of a dime.	One-half cake t. i. d. and petrolatum locally; previous petrolatum and arsenic treatment had little effect.	Very marked improvement.
77— M —50.....	Very marked case of eight years' duration; large plaques, some palm-sized, were present.	One cake t. i. d., and petrolatum locally.	No improvement.
78— M —40.....	Very marked case of six years' duration; large plaques with very thick patches.	One cake t. i. d. for three weeks; petrolatum locally.	No improvement.
79— F —30.....	Moderate case of five years' duration.	Three cakes daily for three weeks; petrolatum locally.	No improvement.

TABLE 10.—REPORTS OF MISCELLANEOUS CASES IN WHICH THE YEAST TREATMENT WAS USED

Case, Sex and Age	Complaint	Treatment	Results
80— F —13.....	Acute bronchitis.	One-half cake dead yeast t. i. d. for seven days.	Marked improvement.
81— F —27.....	Acute bronchitis.	One-half cake dead yeast t. i. d. for one week.	Marked improvement.
82— M —28.....	Mild case of urethritis of three months' duration.	Three cakes daily for three weeks.	Marked improvement.
83— M —26.....	Mild case of urethritis of one month duration.	Three cakes daily for three weeks.	Condition cleared up.
84— F —30.....	Long standing case of arthritis deformans, with marked intestinal stasis and obstinate constipation. Frequent acute exacerbations with redness and swelling of joints.	Ductless gland therapy, intestinal irrigations, B. coli vaccine, etc., for years. One-half cake yeast t. i. d. after meals.	Not much effect. Acute exacerbations disappeared.
85— M —19.....	Enlarged liver, high intestinal stasis, hyperacidity, hypersecretion, gastric motor delay, and marked intestinal putrefaction.	Three cakes daily after meals.	No relief.
86— F —46.....	Pronounced conjunctivitis of the right eye.	One-half cake dead yeast t. i. d. for seven days.	Eye became normal.
87— M —22.....	Folliculitis; hundreds of hair follicles from ankles to knees much inflamed; two months' duration.	Three cakes daily and petrolatum locally for three weeks.	Cured in two weeks; no recurrence after one month.
88— M —50.....	Pruritus with generalized itching of two years' duration; patient neurotic.	One cake t. i. d. for three weeks.	No improvement.
89— M — 9.....	Swollen superficial cervical lymph glands.	One-quarter cake dead yeast t. i. d. in orange juice for eight days.	Glands became normal.
90— F — *.....	Erythema and transient urticaria.	One-quarter cake t. i. d. after meals.	Unquestionable improvement and pronounced laxative action.
91— M — *.....	Medical diagnosis of duodenal ulcer with gastric hypermotility.	Frequent feedings; one-half cake t. i. d. after the three main meals; bromids, atropin and alkalies.	Symptoms disappeared and bowels made regular.

* Adult.

SUMMARY

1. Bakers' yeast was found to be a useful remedy in the treatment of furunculosis, acne vulgaries, acne rosacea, constipation and in certain other cutaneous and gastro-intestinal conditions

2. The conditions which respond most favorably to the yeast treatment were (*a*) furunculosis, (*b*) the acnes (vulgaris and rosacea), and (*c*) constipation. Of seventeen cases of furunculosis, all but one of the patients were improved or cured. Of seventeen cases of acne vulgaris, all patients were improved or cured. Of eight cases of acne rosacea, all patients were improved or cured. Of ten cases of constipation, nine were improved or cured. In other words, fifty out of fifty-two cases of furunculosis, the acnes, and constipation were improved or cured by yeast treatment.

3. We consider that yeast is fully as successful as any other remedy in furunculosis, acne vulgaris and acne rosacea.

4. In many of the cases which came under our observation, the yeast treatment caused an improvement in the general physical condition of the patient quite unassociated with the improvement of the symptoms associated with the particular disease in question.

SPECIFIC SERUM THERAPY OF EPIDEMIC POLIOMYELITIS

A REPORT ON ONE HUNDRED AND FIFTY-NINE CASES TREATED WITH ANTIPOLIOMYELITIC HORSE SERUM *

JOHN W. NUZUM, M.D.
AND
RALPH G. WILLY, M.D.
CHICAGO

This report describes in detail the mode of production, technic of administration and the results obtained in a series of 159 cases of epidemic poliomyelitis treated with antipoliomyelitic serum prepared in the horse by injections of the poliomyelitic coccus. These patients were treated in the Cook County Hospital during the present epidemic which has prevailed throughout the summer and autumn months of 1917 in the city of Chicago.

The epidemic first appeared during the latter part of July, 1917. It may be said to have reached its height during the first twenty days of September, when more than 200 cases were reported to the health department and over 100 patients were admitted to the isolation ward of the Cook County Hospital. With the advent of cool weather the number of daily admissions appears to be decreasing somewhat, and accordingly it now seems pertinent to report the results attained up to October 1 of the present year.

We have been fortunate, indeed, in having the opportunity to study two different outbreaks of infantile paralysis. The first epidemic visited Chicago during the summer of 1916, when there were 285 cases reported with a mortality of 15 per cent. The present epidemic of 1917 has already exceeded the first both as regards the total number of cases reported and more especially the extreme virulence of the causative micro-organism and the unusually high death rate. From statistics kindly furnished by the Chicago Health Department, 301 cases of poliomyelitis have been reported during the period of July 20 to Oct. 1, 1917, with a mortality of 32 per cent. The majority of deaths have occurred in those cases of an ascending or Landry's type of paralysis with progressive involvement of the diaphragm, intercostal and accessory muscles of respiration. It should be mentioned that in a considerable number of patients the disease has terminated fatally within from twenty-four to forty-eight hours after the onset of the symptoms, and not a few patients have died in the ambulances en route to the hospital.

The detection of neutralizing substances in the blood serum of both monkeys and human beings[1] following an attack of poliomyelitis, and the observations of Flexner and Lewis[2] of the protection of inoculated monkeys by means of injections of serum of recovered monkeys and human beings apparently has furnished the basis for serum therapy in man. Netter[3] and more recently several others have reported favorably on the treatment of poliomyelitis in man by injections of immune serum from convalescent patients. Unfortunately, however, it would seem that there are several disadvantages attendant on this method. Chief among these is the difficulty in securing serum in sufficient quantity properly to treat any considerable number of patients, and what is of still greater importance, the probable low antibody content of human serum as compared with an immune serum produced in the horse by injections of the causative micro-organism. The independent observations of Mathers,[4] Rosenow[5] and Nuzum and Herzog[6] on the presence of a peculiar gram-positive coccus in the central nervous system of poliomyelitic patients was soon followed by the isolation of the same coccus from the spinal fluid[7] of patients during the early stages of poliomyelitis. An intensive bacteriologic study of the spinal fluid of poliomyelitic patients during the present epidemic has served to confirm with striking regularity the presence of the same micrococcus. Thus in 128 cases the coccus has been isolated in pure culture in 109, or 85 per cent.; in ten, or 8 per cent., *B. subtilis* was present as a contamination, and nine cases, or 7 per cent., remained sterile. In many cases repeated punctures on successive days have yielded pure cultures of the coccus. Cultures are obtained with ease by inoculating a 1 per cent. glucose broth medium with from 1 to 2 c.c. of freshly drawn spinal fluid, and incubating under aerobic conditions for from twenty-four to forty-eight hours. Initial cultures on solid mediums are difficult to obtain. The majority of these different strains have been identified in subcultures on human blood agar-plates as fine, pin point, slightly green colonies often surrounded by a hazy zone of hemolysis. Moreover, we have found it possible to identify the coccus by the use of immune horse serum, employing the dilution method for estimating the point of opsonic extinction. This reaction is specific for the poliomyelitic coccus. Finally, we have recently shown, as has Rosenow,[8]

* From the Laboratory of Pathology of the Cook County Hospital.

1. Levaditi and Landsteiner: Compt. rend. Soc. de biol., 1910, **68**, 311. Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, THE JOURNAL A. M. A., May 28, 1910, p. 1780.
2. Flexner and Lewis (Footnote 1).
3. Netter, A.: Bull. de l'Acad. de méd., 1915, **74**, Series 3, p. 403.
4. Mathers, George: The Etiology of Acute Epidemic Poliomyelitis, Jour. Infect. Dis., 1917, **20**, 113-124.
5. Rosenow, E. C.; Towne, E. B., and Wheeler, G. W.: The Etiology of Epidemic Poliomyelitis, THE JOURNAL A. M. A., Oct. 21, 1916, pp. 1202-1205.
6. Nuzum, J. W., and Herzog, Maximilian: Experimental Studies in the Etiology of Acute Epidemic Poliomyelitis, THE JOURNAL A. M. A., Oct. 21, 1916, pp. 1205-1208.
7. Nuzum, J. W.: Bacteriologic Findings in the Cerebrospinal Fluid in Poliomyelitis, THE JOURNAL A. M. A., Nov. 11, 1916, pp. 1437-1439.
8. Rosenow, E. C.: The Production of an Antipoliomyelitic Serum in Horses, THE JOURNAL A. M. A., July 28, 1917, pp. 261-266.

independently, that repeated intravenous injections of the coccus in the horse produce an immune serum rich in agglutinins, complement fixation bodies and especially opsonin, and such a serum has been shown to possess protective and curative properties against fatal doses of virulent virus in experimental poliomyelitis in monkeys.

On the basis of these results it becomes a matter of the greatest moment to determine the therapeutic efficiency of such an immune serum in acute poliomyelitis in man.

IMMUNIZATION OF HORSE

A large horse, 6 years old, weighing 1,400 pounds, was selected and immunized, at first, according to the method described by Amoss and Wollstein,[9] which we previously empolyed to produce an antipoliomyelitic serum in sheep. The horse received intravenous injections of living organisms in increasing doses on three successive days, followed by periods of rest of from seven to ten days. For the first injection the twenty-four hour growth on a glucose agar slant was suspended in 2 c.c. of sterile physiologic sodium chlorid solution, and 0.3 c.c. of this suspension in 10 c.c. of saline solution was injected intravenously. Twenty-four hours later, 0.5 c.c. of the foregoing suspension of bacteria in 10 c.c. of physiologic sodium chlorid solution were injected intravenously, and a similar dose was given on the third day. This was followed by a period of rest, when a second series of injections was instituted. Small desensitizing doses have been regularly employed during the first injection of each series, and after the lapse of an hour the full dose is given. The organisms injected have all been originally cultivated in 1 per cent. glucose broth, and later subcultures were made on glucose agar slants and incubated at 35 C. for from eighteen to twenty-four hours. All of the strains employed for immunization have been subcultivated through several generations, always under aerobic conditions, and each strain injected has regularly been plated on blood agar prior to injection into the horse.

The first serial injections were begun, Jan. 30, 1917, and consisted of the poliomyelitic coccus isolated from the brain and cords of two recent human patients. The following six serial injections contained strains isolated from the spinal cord and the central nervous system of six fatal cases of human poliomyelitis, all of which were confirmed by necropsy and by microscopic sections of the spinal cord. The next seven serial injections consisted chiefly of the coccus isolated from the central nervous system of five different monkeys recently paralyzed with virus. Injections of bacteria were given usually intravenously but also by intramuscular injections and subcutaneously into the neck, shoulder and buttocks of the horse. The maximum dose has consisted of the twenty-four hour surface growth of three glucose agar slants in 8 ounce nursing bottles. Regular serial injections of both human and monkey coccus were continued up to July 1, 1917. A test bleeding made, June 6, revealed a potent immune serum. At this time 5,000 units of tetanus antitoxin were injected subcutaneously into the left buttock of the horse. From July 1 to September 15 a mixed culture of ten different strains of the coccus recently isolated from the spinal fluid of patients has been injected intravenously according to the schedule of serial injections followed above. The horse has been bled as follows: June 6, 500 c.c.; July 11, 2,000 c.c.; July 28, 2,000 c.c.; August 8, 3,500 c.c.; August 23, 2,500 c.c., and September 14, 3,600 c.c.

9. Amos, H. L., and Wollstein, Martha: A Method for the Rapid Preparation of Antimeningitis Serum, Jour. Exper. Med., 1916, 23, 403.

PREPARATION OF SERUM

After serial injections with different strains of the coccus over a period of four months according to the method outlined above, the horse was bled, June 6, and the antibody content of the serum determined. With the employment of homologous strains of the coccus, agglutination was found to be complete at 1:5,000 dilution, while the point of opsonic extinction as estimated by the dilution method of Klein was 1:6,144. From ten to fourteen days after the last injection the horse was bled from the jugular vein and the blood collected in sterile flasks under aseptic conditions. The blood was allowed to clot, at first at room temperature, and later the flasks were placed in the ice box for from twenty-four to forty-eight hours. The serum was decanted and centrifuged in sterile rubber capped containers. After repeated cultural tests for sterility the clear hemoglobin-free serum is bottled in sterile flasks of 2 ounces capacity plugged with rubber stoppers and sealed with paraffin. The serum for intraspinal administration is preserved in glass containers similar to those utilized in the preservation of antimeningococcic serum.

The serum employed by us has been used unactivated and unpreserved. The addition of 0.2 per cent. tricresol as a preservative has in our experience given rise to rather severe reactions in two patients and been found to aggravate the local irritant effect. It is highly essential that only serum free from hemoglobin be employed, as its presence definitely increases the irritative effect. Regarding the duration of potency of the serum, it has been found that the antibody content as determined by opsonic extinction and agglutination tests of a specimen preserved in the ice box has thus far remained unaltered over a period of three months.

METHOD OF ADMINISTRATION

All of the patients have been treated with serum both by intraspinal injections and at the same time by intravenous administrations. A considerable number have also received intramuscular injections. Intraspinal injections of from 5 to 15 c.c. were given slowly by the gravity method after the previous withdrawal of an equal or greater amount of spinal fluid. It is well known that in poliomyelitis the lumen of the blood vessels is constricted by the encircling ring of mononeuclear lymphocytes—the so-called perivascular infiltration. Accordingly it would appear that the amount of serum which can be safely injected intraspinally in children without danger of producing further injury to the brain stem must be small. At the same time it seems highly desirable to inject larger amounts intravenously in order to effect as rapid a neutralization of the virus as possible. In young children, in whom the median basilic vein is too small to find, we have regularly turned the head to one side; and if pressure is made with the finger just above the clavicle, the external jugular vein stands out very prominently even in infants, and can be readily entered by the needle. From 15 to 30 c.c. of serum are slowly injected intravenously.

CLINICAL PICTURE FOLLOWING SERUM THERAPY

In many of the acute cases the administration of serum has been followed by a critical fall in the temperature occurring from twelve to thirty-six hours

after injection. Coincident with this there is a slowing of the pulse rate and definite clinical evidence of general improvement. The initial rise in the temperature usually attributed to the injection of human serum has occurred in only a very few cases. When the temperature has remained high we have repeated the intravenous injection in a few patients within twelve hours after the first treatment. It has seemed to us that the temperature may well serve as a guide to the optimum dosage of serum. Serum reactions have occurred in approximately one third of our cases usually from five to eight days after injection, and manifest themselves as an urticaria which disappears within from twenty-four to forty-eight hours. These have always rapidly disappeared, and beyond the transient discomfort to the patient, have appeared of little consequence.

ANALYSIS OF CASE HISTORIES

During the latter part of the Chicago epidemic of 1916, one of us (J. W. N.) first treated a small series of ten cases of typical poliomyelitis by intraspinal and intravenous injections of the immune serum produced by injections of the poliomyelitic coccus in the sheep. The first patient was treated, Dec. 29, 1916.[10] Ten patients in all were treated, with one death. Two patients who received early treatment recovered completely and warrant brief consideration:

CASE 1.—G. S., girl, aged 8 years, Dec. 27, 1916, had headache and vomited. December 28, there was weakness of both legs. December 29, she was admitted to the hospital, with temperature of 99.6 F. She was stuporous. The pupils were dilated and unequal. The right leg was flaccid, and the patellar jerk was absent. The left leg was weak. There was paralysis of the urinary bladder, and incontinence of both urine and feces. The bladder was distended to the level of the umbilicus.

December 29, 15 c.c. of immune serum were injected intraspinally and 20 c.c. serum intravenously. January 6, the child appeared bright and took nourishment. Twenty c.c. of serum were injected intravenously, January 9. The bladder and the bowels were acting. The paralysis never progressed, and after a sojourn of five weeks in the hospital the patient was discharged with a complete return of function of both legs.

CASE 2.—Mrs. B., aged 25, March 1, 1917, had headache, coryza and drowsiness. March 4, she was unable to move her legs. There was incontinence of urine and feces. March 5, she was admitted to the hospital. There was flaccid paralysis of both legs, with loss of Achilles and knee jerks. The bladder was distended with urine. There was apparent weakness of both hands. There was bilateral ptosis. The cerebrospinal fluid was clear, with 85 cells per cubic millimeter and positive globulin tests. March 6, 15 c.c. of serum were injected intraspinally and 20 c.c. intravenously. March 8, 25 c.c. of spinal fluid were withdrawn and 15 c.c. of serum injected intraspinally. March 9, the temperature was normal and there had been no spread of the paralysis. March 14, the patient talked irrationally and complained of difficulty in seeing objects. March 20, a plaster cast was applied to the legs by Dr. Parker.

The patient made a complete recovery, and walked out of the hospital, April 12, 1917. She has been examined on two subsequent occasions, and has regained her tendon reflexes and apparently complete function of her legs.

The foregoing cases served to emphasize the possible value of serum therapy and the importance of early administration of serum. The first patient was treated within forty-eight hours after definite symptoms of meningeal invasion. The second patient came under treatment at a later date when the paralysis was marked and rather disseminated over the cerebrospinal axis. Both patients received repeated injections of serum intravenously and intraspinally, and both made a good recovery.

During the present epidemic of 1917 and up to October 1, we have treated a total of 159 patients. During the same period, 250 patients have been admitted to the isolation wards of the Cook County Hospital on the services of Drs. Francis, Hoyne, Blatt and Irish, to whom we are indebted for the opportunity to treat and study these patients. All patients have been admitted in rotation to the services of these different attending physicians, and all patients admitted on one of these services have served as controls so far as they have not been treated with immune serum. The observation was made early in the course of serum therapy that patients with respiratory paralysis represent the end-picture in infantile paralysis and are not benefited either by serum therapy or by any other known treatment. Seven patients with typical respiratory paralysis have been given serum as a last resort without any apparent beneficial effects. These seven patients have been included in our total number of nineteen deaths in cases in which the patients received serum therapy. More recently we have not treated patients exhibiting an advanced respiratory paralysis at the time of admission to the hospital. With this possible exception there has been no selection of cases for serum treatment.

We have thus far treated 159 patients admitted to the Cook County Hospital in all stages of infantile paralysis. Of these 159 cases, nineteen patients have died, giving a mortality rate of 11.9 per cent. Excluding seven patients admitted to the hospital with advanced respiratory paralysis and dying within a short time after admission, to whom serum was given as a last resort, we have twelve deaths with a mortality rate of 7.5 per cent. At first glance these figures are in striking contrast to the total number of 100 patients admitted to the hospital during the same period of time and not receiving serum therapy. Of these 100 patients, thirty-eight died, a mortality rate of 38 per cent. However, it must be stated in all fairness that of these 100 untreated cases, twenty-five patients had an advanced respiratory paralysis on admission.

MORTALITY IN PATIENTS TREATED WITH SERUM IN THE COOK COUNTY HOSPITAL AS COMPARED WITH UNTREATED CASES FROM JULY 20 TO OCT. 1, 1917

	Total Cases	Deaths	Mortality, Per Cent.
Untreated cases	301	97	32
Serum treated cases	152	12	7.5

The mortality rate of a series of serum treated cases as compared with a series of untreated cases occurring during the same period of time and during the same epidemic of 1917.

For purposes of analysis and comparison we have divided the patients treated with serum into two groups. Group 1 comprises a series of fourteen cases in which no definite paralysis could be detected at the time serum treatment was instituted. This group has been further subdivided into Class 1, comprising ten typical preparalytic cases in all of which the history, clinical examination and spinal fluid findings were positive for poliomyelitis, and Class 2, consisting of four patients presenting the clinical picture of the meningeal or encephalitic type of the disease, namely, rigid neck, opisthotonos, stupor, muscular twitchings, spastic extremities, etc. Group 2 comprises a series of 141 patients, all exhibiting varying degrees of paralysis at the time of treatment. This group has for convenience been subdivided into Class 1, composed of patients in whom the paralysis appeared to be spreading, and Class 2, consisting of patients with definite

10. A brief preliminary report of the results attained appeared in the Bulletin of the Chicago Medical Society, April 21, 1917.

paralysis of varying duration. Brief summaries are given of instructive case histories illustrating the various group divisions:

GROUP 1. NO PARALYSIS AT THE TIME OF TREATMENT (TEN CASES)

CLASS 1. PREPARALYTIC CASES

CASE 98.—Boy, aged 18 months, Sept. 17, 1917, had fever and showed irritability. September 18, he complained of

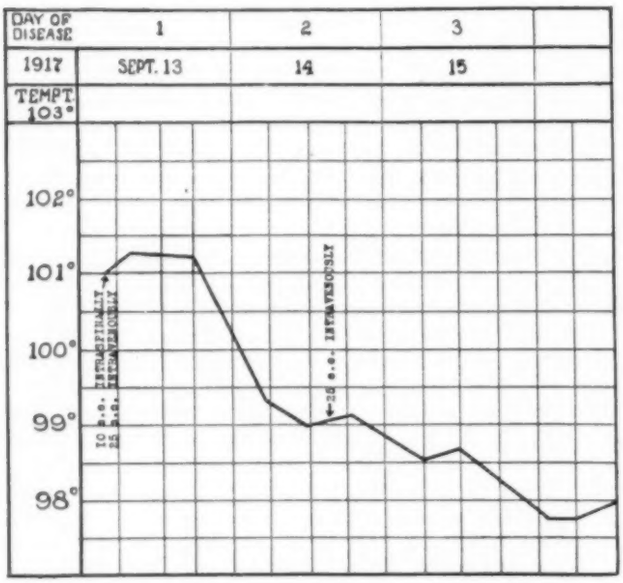


Chart 1 (Case 79).—Temperature curve in a typical preparalytic case of poliomyelitis in which the patient developed a transitory right sided facial paresis thirty-six hours after the first injection of serum. This patient made a complete recovery.

pain in the legs when made to stand. September 19, he was admitted to the hospital. The temperature was 101.4, the pulse 120, and respirations 26. The cerebrospinal fluid revealed 120 cells per cubic millimeter. Globulin tests were positive. No paralysis was detected. September 19, at 2 p. m., 5 c.c. of serum were injected intraspinally and 15 c.c. intravenously. September 20, the temperature was normal and no paralysis ever developed.

Serum was given forty-eight hours after the first symptoms, and the temperature fell from 101.4 to normal within twenty-four hours and paralysis never developed.

CASE 79.—Boy, aged 3 years, Sept. 13, 1917, was brought to the hospital by the mother, who stated that the patient complained of headache, pains in the legs and the back of the neck, and felt too sick to get out of bed that morning. On admission the temperature was 101. The spine sign was positive. The cerebrospinal fluid revealed 27 cells per cubic millimeter. Globulins were +++. No paralysis was detected. September 13, 10 c.c. of serum were injected intraspinally and 25 c.c. of serum intravenously. September 14, the temperature was 99.2. Twenty-five c.c. of serum were injected intravenously. September 15, the temperature was normal. September 18, a definite right sided facial paresis had appeared, which, however, was transitory, and the patient recovered completely.

This patient received serum within twelve hours after the first symptoms appeared. The interesting feature of this case is the appearance of a facial paresis five days later, which lasted only two days, and recovery was uneventful.

CASE 13.—Girl, aged 3 years, Aug. 15, 1917, on admission to the hospital, had a temperature of 101; the pulse was 120, the respirations, 22. There were fine twitchings of the muscles of the entire body. There was left sided facial paresis, with ptosis of the left upper eyelid and drooping of the left corner of the mouth. No paralysis was detected. The cerebrospinal fluid was clear, with 59 lymphocytes. The globulin was increased. August 15, 10 c.c. of serum were injected intraspinally and 18 c.c. intravenously. August 16, the temperature was normal. Ten c.c. of serum were injected intraspinally. Recovery was complete.

CASE 46.—Girl, aged 6 months, Sept. 2, 1917, had fever and vomited. September 4, the child was drowsy and irritable. September 5, she was admitted to the hospital. The temperature was 99.6, the cerebrospinal fluid, 170 cells per cubic millimeter. The globulin was +++. No paralysis was detected. Ten c.c. of serum were injected intravenously. September 8, 10 c.c. of serum were injected intravenously. The temperature was normal the following day, and paralysis never developed.

CASE 17.—Girl, aged 10 months, Sept. 18, 1917, was admitted to the hospital with a history of fever and vomiting two days before. The temperature was 99, the pulse, 120, and respirations, 26. No definite paralysis was present, but the right arm and shoulder appeared paretic. The cerebrospinal fluid revealed 42 lymphocytes per cubic millimeter. The globulin test was +++. September 18, 12 c.c. of serum were injected intravenously. The weakness of the right arm and deltoid rapidly disappeared, and recovery was uneventful.

Ten patients, all undoubted instances of preparalytic poliomyelitis, have been treated with immune serum in the early stages of the disease, with prevention of paralysis and complete recovery in 100 per cent. Whether or not paralysis would have developed in all of these patients without serum treatment cannot be determined. As to the apparent advantage of the early administration of serum, there can be no doubt.

CLASS 2. MENINGEAL TYPE (FOUR CASES)

CASE 30.—Girl, aged 22 months, Aug. 24, 1917, was admitted to the hospital. No history of the duration of the illness was available. The temperature was 101.6. The child was extremely rigid and stuporous. There were involuntary twitchings of the arms and hands. The legs were spastic.

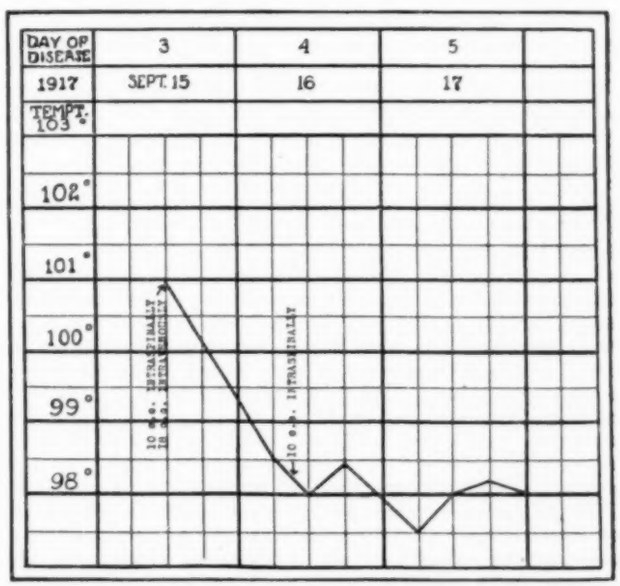


Chart 2 (Case 13).—Temperature curve of a patient admitted to the hospital with a marked left sided facial paresis. Fine muscular twitchings of the face and extremities. Complete recovery following serum treatment.

There was marked tremor of the neck and face muscles. No paralysis was detected. The cerebrospinal fluid was clear; pressure was markedly increased, and there were 154 cells per cubic millimeter, with globulins increased. August 25, 20 c.c. of serum were injected intravenously. August 26, the temperature was 101. Five c.c. of serum were injected intraspinally and 15 c.c. intravenously. The temperature reached

normal within forty-eight hours, stupor and rigidity of muscles disappeared, and the patient made a complete recovery.

CASE 36.—Boy, aged 3 years, Aug. 30, 1917, was admitted to the hospital. Illness began five days before. The patient lay quiet on the bed, the head retracted and rigid, with marked spasticity of both arms and legs. The reflexes were exaggerated. No paralysis was detected. He cried out when the chin was flexed on the abdomen. The cerebrospinal fluid was

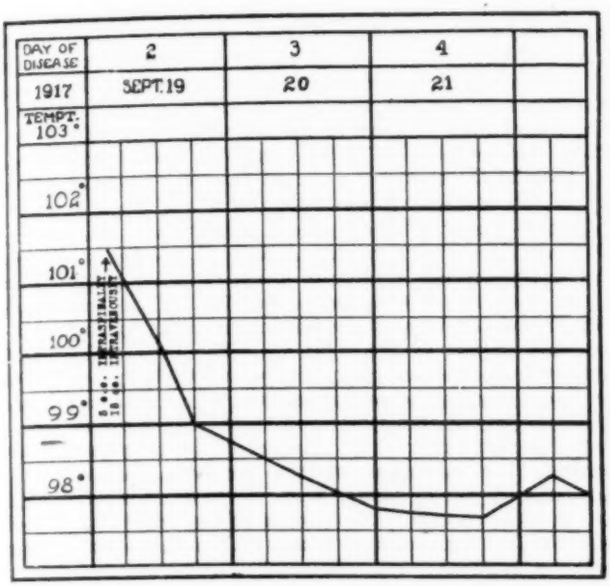


Chart 3 (Case 98).—Temperature curve in a typical preparalytic case of poliomyelitis. Spinal fluid contained 120 cells per cubic millimeter with positive globulin tests. Serum injected thirty-six hours after onset of fever and pain in legs. Note the critical fall of the temperature, with rapid and complete recovery.

clear and contained 320 cells per cubic millimeter, with positive globulin tests. August 30, 5 c.c. of serum were injected intraspinally and 12 c.c. intravenously. August 31, 6 c.c. of serum were injected intraspinally and 15 c.c. intravenously. The patient made a complete recovery.

The foregoing cases are instructive in that they simulate the clinical picture of meningitis. The disease expends its greatest insult on the upper motor neuron, and the mortality of this type of cases is high. We have treated four meningeal types of poliomyelitis with one death, a recovery rate of 75 per cent.

GROUP 2. CASES SHOWING PARALYSIS AT TIME OF TREATMENT

CLASS 1. PARALYSIS EXTENDING

CASE 26.—Boy, aged 5 years, Aug. 21, 1917, was admitted to the hospital with a history of onset two days previously and the condition growing worse. The child was acutely ill. He could not move head or arms. There was paralysis of the sternocleidomastoid muscles. The head fell backward when the patient was lifted by the arms. There was flaccid paralysis of both arms, and the patient could move the fingers only slightly. The temperature was 100. The cerebrospinal fluid revealed 33 cells per cubic millimeter. The globulin was + + +. August 21, 10 c.c. of immune serum were injected intraspinally and 25 c.c. of serum intravenously. August 22, the respirations were embarrassed. There was slight cyanosis. Ten c.c. of serum were injected intravenously, 5 c.c. intraspinally, and 10 c.c. intramuscularly. August 23, the child was given 20 c.c. of serum intramuscularly. The patient regained good use of the left arm and hand, but the paralysis of the neck, muscles and right arm remained unchanged.

This case is interesting because the location and extent of the paralysis were against the patient's chances for recovery. The early convalescence was stormy, and at one time it was thought that the child had developed a respiratory paralysis. He was given a total of 80 c.c. of serum, and recovered, with good use of the left arm. Whether or not the serum prevented a fatal respiratory paralysis cannot be determined; but we do know that this class of untreated cases has been attended by a high mortality.

CASE 28.—In a girl, aged 6 years, the illness began Aug. 18, 1917, with a convulsion followed by pains in the legs and the back of the neck. August 23, there was weakness of the right leg, and the child became stuporous. August 24, she was admitted to the hospital with the tentative diagnosis of epidemic meningitis. The temperature was 101, the pulse, 128, and respirations, 30. The child was stuporous, and there was flaccid paralysis of both legs. The neck muscles were paretic. The spinal fluid was clear and contained 171 cells per cubic millimeter. The globulin test was + + +. August 24, 10 c.c. of serum were injected intraspinally and 20 c.c. intravenously. August 25, the temperature was 99. The stupor was gone. General improvement was noted. Eighteen c.c. of serum were given intravenously. The temperature reached normal twelve hours after the second injection of serum. The patient was discharged from the hospital, September 24, with paralysis of the legs but slightly improved.

Whether the prompt subsidence of the stupor and the critical drop in temperature can be ascribed to the serum treatment cannot be definitely determined. The paralysis did not progress.

CASE 3.—The onset in a girl, aged 2 years, occurred, July 26, 1917, with headache, fever and vomiting. July 28, there was flaccid paralysis of both lower extremities with weakness of the neck muscles and paresis of both arms. July 29, when she was admitted to the hospital, the temperature was 103, the pulse, 150, and respirations, 60. There was flaccid paralysis of both lower and upper extremities. There was beginning respiratory involvement. The spinal fluid revealed 47 cells per cubic millimeter. Ten c.c. of serum were injected

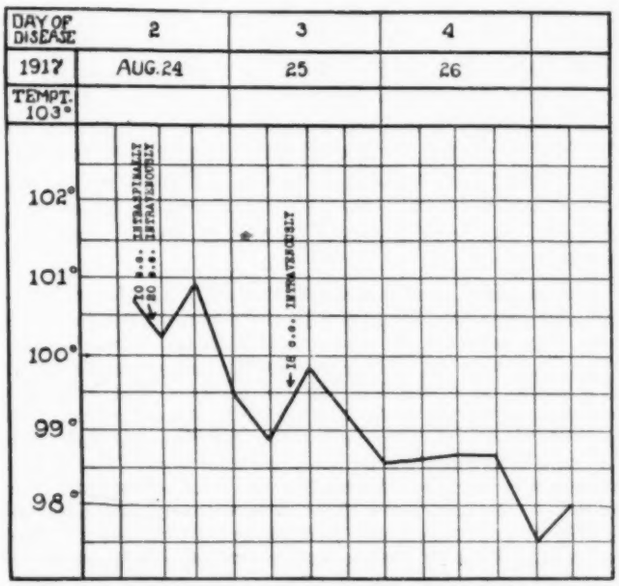


Chart 4 (Case 28).—Temperature curve of a patient admitted to the hospital with flaccid paralysis of both legs. Marked stupor and rigid neck. This patient recovered, with partial use of the legs.

intraspinally after previous withdrawal of 15 c.c. of spinal fluid. July 30, the temperature was 100. The patient had developed a marked respiratory and facial paresis. Spinal puncture was performed and 15 c.c. of fluid withdrawn slowly. Five c.c. of serum were injected intraspinally and 5 c.c. intravenously. July 31, the temperature was 103, the pulse, 174, and respirations, 64. The child died.

This case is of interest for several reasons. It represents the typical form of Landry's paralysis with rapid ascending progression of the paralysis and ultimate involvement of the respiratory center and death. Not a few similar cases have occurred in this epi-

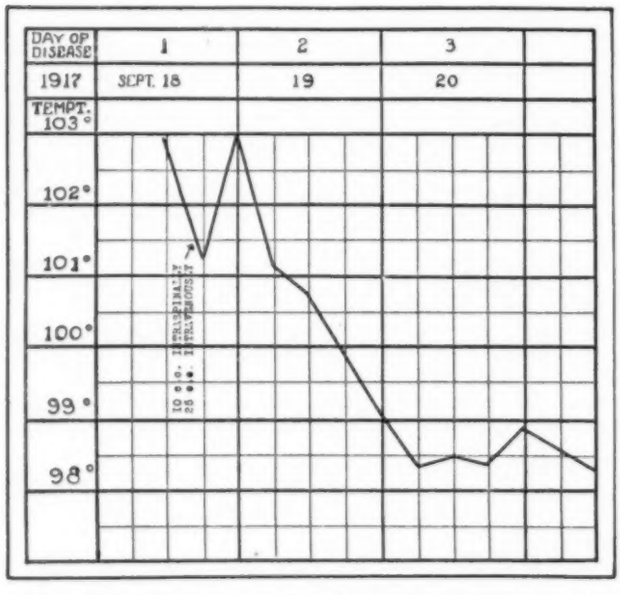


Chart 5.—Temperature curve of a patient with poliomyelitis. Flaccid paralysis of both legs with paresis of the right arm and shoulder. Duration of paralysis, seventy-two hours. The weakness of the arm disappeared rapidly following serum, and the paralysis did not progress. The legs remained flaccid.

demic. The optimal time for serum treatment obviously was between July 26 and July 28. Seventy-two hours after the onset and at a time when all the extremities were paralyzed, the respiratory center involved, and the prognosis certain, 10 c.c. of serum were given intraspinally. The temperature dropped from 103 to 100, and accordingly a second dose of 10 c.c. serum was administered. Death occurred, July 31. This case serves to confirm the impression gained of the futility of any form of treatment after the respiratory center has become involved. Furthermore, we subsequently learned that the best results have been obtained in those patients receiving larger doses of serum.

Case 74.—Boy, aged 2 years, Sept. 9, 1917, had fever, headache and vomiting. September 10, there was weakness of both legs. September 12, he was admitted to the hospital. The temperature was 100. There was flaccid paralysis of the right leg. Weakness of the left leg was marked. The head fell backward when the child was raised by the shoulders, and the neck muscles were paretic. The cerebrospinal fluid was clear and contained 50 cells per cubic millimeter. The globulin test was + + +. September 12, 6 c.c. of serum were injected intraspinally, and 20 c.c. intravenously, and September 14, 10 c.c. intraspinally and 20 c.c. intravenously. September 15, the temperature was normal and has remained normal to date. The paresis of the neck muscles and right leg rapidly disappeared. The flaccid paralysis of the left leg still remains.

Serum therapy was instituted forty-nine hours after the onset of paralysis in this patient. A total of 50 c.c. of serum was injected, and the temperature dropped to normal within twenty-four hours. The paresis of the right leg never progressed, and the weakness of the neck muscles rapidly disappeared. This coincides with our observations that it is much easier to prevent paralysis altogether and to lessen the spread and severity than to effect its rapid retrogression.

Class 2. Paralysis Present

Case 95.—Boy, aged 5 years, Sept. 13, 1917, had fever, headache and vomiting. September 17, he had pain in the left shoulder and back, and was unable to use the left arm. September 17, he was admitted to the hospital. The temperature was 103. Pain was elicited on manipulation of the left shoulder. There was definite paresis of the left shoulder muscles. The cerebrospinal fluid was clear and under increased pressure; it contained 21 lymphocytes per cubic millimeter. Globulin was increased. September 17, 10 c.c. of serum were injected intraspinally and 25 c.c. intravenously. The temperature dropped to normal within thirty-six hours. There was no extension of the paralysis. On discharge from the hospital the child has regained complete muscular power in the left shoulder girdle and arm.

Case 4.—Onset in a boy, aged 9 months, occurred, July 27, 1917, with fever and vomiting. July 28, weakness of both legs was noted and inability to stand. July 29, on admission to the hospital, the temperature was 101. There were complete flaccid paralysis of the left lower extremity, and weakness and paresis of the right leg. The cerebrospinal fluid contained 33 cells per cubic millimeter. Globulin tests were positive. July 29, the patient received 10 c.c. of serum intraspinally. July 31, the temperature was 99.2; 5 c.c. of serum were injected intraspinally. August 2, the temperature was normal. No extension of the paralysis had occurred. August 4, 5 c.c. of serum were injected intraspinally and 10 c.c. intravenously. The paresis of the right leg cleared up. The left leg remained flaccid on the patient's discharge from the hospital.

Case 97.—Onset in a boy, aged 10 years, occurred, Sept. 15, 1917, with headache, fever and vomiting. September 18, there was weakness of both legs, and the patient could not stand up. September 19, on admission to the hospital, the child appeared acutely ill. There was paralysis of both legs, with loss of tendon reflexes. Both arms were paretic, and he could move only the fingers. The spinal fluid was clear

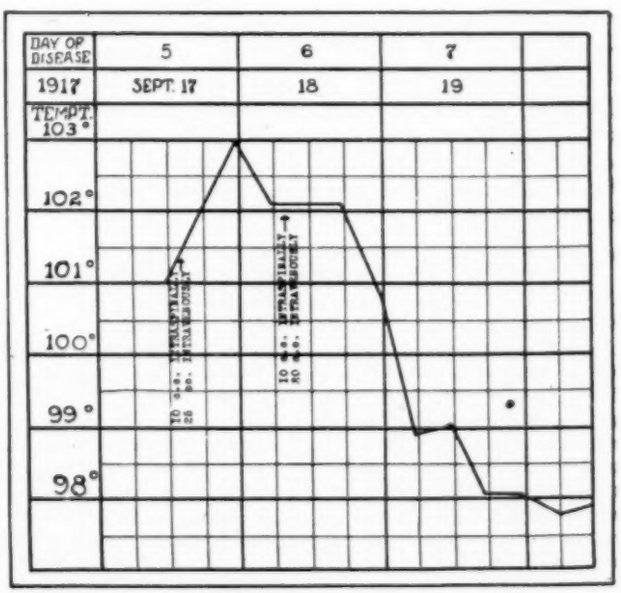


Chart 6.—Temperature curve in a case of poliomyelitis with paresis of the muscle groups of the left shoulder. Patient made a rapid and complete recovery following serum treatment.

and contained 109 cells per cubic millimeter with globulin + + +. September 18, 15 c.c. of serum were injected intraspinally and 20 c.c. intravenously. September 21, the temperature was normal and has remained normal to date. The paresis of the arms has rapidly disappeared, and the patient has good use of the arms and the hands. September 30, the

legs have remained flaccid, and the Achilles and patellar reflexes are still absent.

CASE 6.—Girl, aged 11 months, Aug. 2, 1917, was admitted to the hospital with a history of the onset of paralysis seventy-two hours before. The temperature was 102. There was flaccid paralysis of both legs, with loss of reflexes. There was left sided facial paralysis. The neck was rigid and the spine sign positive. There was spasticity of both arms. August 3, 3 c.c. of serum were injected intraspinally and 10 c.c. intravenously. August 4, the temperature was 101.4. The condition remained unchanged. Three c.c. of serum were injected intraspinally and 10 c.c. intravenously. August 5, the temperature dropped to normal and has remained normal to date. The facial paralysis and rigidity of the neck rapidly disappeared. The legs are still flaccid.

CASE 65.—The onset of disease in a boy, aged 14 months, occurred Sept. 4, 1917, with fever and vomiting. September 9, paralysis of both legs developed. September 11, on admission to the hospital, the temperature was 100. There were flaccid paralysis of the legs and a paresis of the neck muscles. Six c.c. of serum were injected intraspinally and 25 c.c. intravenously. There was a critical drop in temperature to normal within twenty-four hours after the injection. The weakness of the neck muscles rapidly disappeared. The paralysis of the legs has remained unaltered.

CASE 118.—The onset in a girl, aged 1 year, occurred, Sept. 22, 1917, with vomiting and fever. She was admitted to the hospital, September 23, just twenty-four hours after the first symptoms. The temperature was 102. The child appeared acutely ill. There was marked left sided facial paralysis, with inability to close the left eye. The left corner of the mouth drooped completely. No paralysis of the extremities was detected. The spinal fluid contained 21 lymphocytes per cubic millimeter, with positive Noguchi, Nonne and Ross Jones tests. September 23, just twenty-four hours after the onset, 5 c.c. of serum were injected intraspinally and 15 c.c. intravenously. A critical drop of the temperature to normal occurred the following day. Paralysis has never appeared in the extremities. September 30, facial paralysis is disappearing, and the prognosis for complete recovery is excellent.

CASE 107.—Girl, aged 2½ years, Sept. 16, 1917, had fever and headache. September 20, weakness of the left arm appeared. September 21 she was admitted to the ward. The temperature was 101. The child appeared acutely ill. She was stuporous. The neck muscles were paretic. There was weakness of the left shoulder and arm. The deltoid muscle was paretic, with loss of reflexes in the left arm and shoulder. September 21, twenty-six hours after the onset of weakness of the shoulder and neck muscles, 10 c.c. of serum were injected intraspinally and 25 c.c. intravenously. September 22, the condition had improved and the stupor was gone. Ten c.c. of serum were injected intraspinally and 20 c.c. intravenously. September 25, the temperature reached normal, and there had been a rapid general improvement. The paresis never progressed. The child can move the left arm in all directions, and the prognosis appears excellent for complete recovery.

The foregoing case histories are included to illustrate the definite value of serum treatment in preventing the spread of the paralysis. All of these patients were treated at the optimal time, from twenty-four to forty-eight hours after onset. It will be noted that while the paretic muscles and weakness of the extremities rapidly disappeared following serum therapy, flaccid paralyses remained unaltered.

COMMENT

We have treated a series of 159 cases of poliomyelitis with immune serum prepared in the horse by repeated intravenous injections of the coccus isolated chiefly from human poliomyelitic sources. Prior to its use in man, we have proved that this serum, prepared in the horse in the manner outlined above, possesses both protective and curative properties in experimental poliomyelitis in monkeys. We proceed now to the estimation of the value of the serum in human poliomyelitis. It is obvious that the value of serum must be based both on the clinical study and impressions gained in the treatment of individual cases, and on statistical evidence acquired after treatment of a large series of cases properly controlled.

Of the group of fourteen cases of undoubted instances of poliomyelitis in which no paralysis could be detected at the time serum treatment was instituted, thirteen patients recovered completely and one died. None of these patients developed paralysis, subsequent to serum treatment. These facts serve to substantiate the impression gained from the treatment of the entire series of cases, that it is much easier to prevent paralysis altogether and definitely to arrest the extension and lessen the severity of the paralysis than to bring about its rapid disappearance. It should be mentioned in this connection, however, that we have repeatedly observed definite weakness or paresis of extremities rapidly disappear following serum therapy. Furthermore, of the entire 159 cases treated in all stages of paralysis, in only three late cases has the paralysis extended to the respiratory center with a fatal result. This is significant when we recall the unusually high mortality of the present epidemic with the relatively large number of fatal respiratory paralyses among untreated patients.

Regarding the mortality rate, we have thus far treated a total number of 159 patients with nineteen deaths, a mortality of 11.3 per cent. Mention should be made of the fact that of these nineteen fatal cases, seven patients were admitted to the hospital with advanced respiratory paralysis, and all died within periods varying from seven to seventy-two hours after admission. These patients have been included in estimating the total mortality, obviously an unfair test for estimating the therapeutic efficiency of the serum.

From statistics kindly furnished by the Health Department of the city of Chicago, a total of 301 cases were reported with ninety-seven deaths, a mortality of 32 per cent. for the period of July 20 to Oct. 1, 1917. During this same period of time we have treated a series of 152 patients, excluding seven respiratory paralyses on admission, with twelve deaths, giving a mortality rate of 7.5 per cent.

In by far the majority of patients receiving serum, the fever, at times high, has fallen rapidly to normal within periods varying from twelve to twenty-four hours. Coincident with this critical drop of the temperature there usually occurs a slowing of the pulse rate and other clinical evidence of rapid general improvement.

Finally, we wish to consider briefly the extremely important problem of the dosage and mode of administration of the serum. A careful analysis of the case histories suffices to demonstrate the harmlessness of the serum when slowly injected both intraspinally and intravenously. The serum has always been tested for sterility after passage through a Berkefeld filter, and has been used without a preservative. It must be free from corpuscles and hemoglobin.

As in other acute infectious diseases, recovery from poliomyelitis must depend on the process of self-immunization. Accordingly, the simultaneous intraspinal and intravenous injections of immune serum afford the most rapid way of flooding the central nervous system with specific antibodies to neutralize the virus of the disease. We have attempted to treat

all cases as early as possible with relatively large doses of serum. Obviously the amount of serum that can be safely given to a child intraspinally is small. Accordingly, we have regularly injected small doses of from 5 to 10 c.c. of serum very slowly by the gravity method after the previous withdrawal of an equal or greater amount of spinal fluid. At the same time intravenous doses of from 10 to 30 c.c. of serum are given according to the age of the patient. In many patients we have repeated the intravenous injections at twelve to twenty-four hour intervals, using the temperature as a guide to dosage, with beneficial results. The majority of patients have received total amounts of serum varying from 40 to 75 c.c., depending on the age and severity of the case. In a few critical cases we have injected a total amount of 150 c.c. within seventy-two hours, with beneficial results.

SUMMARY

1. Of 159 patients receiving serum in all stages of the disease, nineteen died, a mortality of 11.9 per cent. Among 100 cases occurring during the same period of time, in which the patients did not receive serum, thirty-eight patients died, a mortality of 38 per cent.

2. We have treated 152 patients in all stages of infantile paralysis, excluding seven cases presenting respiratory paralysis on admission, with eleven deaths—a mortality rate of 7.2 per cent. During this same period of time a total of 301 cases were reported to the Health Department with ninety-seven deaths—a mortality of 32 per cent.

3. This series of treated cases suffices to demonstrate the harmlessness of serum treatment when the serum is free from hemoglobin, sterile to repeated cultures, and the injections are slowly made and all known rules of precaution are observed.

4. The serum appears to possess the power of definitely preventing the onset of paralysis when administered early in the disease. In ten undoubted instances of poliomyelitis in which no paralysis was detected at the time serum was administered, prevention of paralysis and complete recovery resulted in 100 per cent.

5. The action of the serum is more definite in arresting the extension of paralysis and diminishing the severity than in effecting its disappearance.

6. As in other acute infectious diseases, the earlier the serum is administered, the more striking are the results obtained.

7. Serum should be injected intraspinally in small doses and at the same time intravenously in larger amounts. The temperature has been employed as a guide to the dosage.

8. The injection of serum is followed by a critical fall in the patient's temperature. Coincident with this there occurs a slowing of the pulse rate, and usually other definite clinical evidence of general improvement.

9. In doubtful early cases the decision to use serum should rest on the bacteriologic, chemical and microscopic examination of the cerebrospinal fluid.

Negroes Show Lower Suicide Rates than White Persons.—The death rate from suicide among negro males is a little over one half as high as among white males, according to statistics of the Metropolitan Life Insurance Co. In 1916, the rate was 8.2 per hundred thousand insured. Negro females show the very lowest rates of any of the groups studied. The rate was 3.4 per hundred thousand in 1916, the total number of suicides being only twenty-two among over 650,000 insured colored women.

Military Medicine and Surgery

MILITARY SKETCHING AND MAP READING

WILLIAM W. RENO, A.M., M.D.
Lieutenant-Colonel, Medical Corps, U. S. Army; Instructor, Medical Officers' Training Camp
FORT RILEY, KAN.

The ability to read maps is an absolutely essential qualification of a medical officer. Instructions conveyed to him in the field often contain references to maps. If he is unable to understand these references his efficiency is greatly impaired. Then, too, the question of shelter and cover from fire at distant points

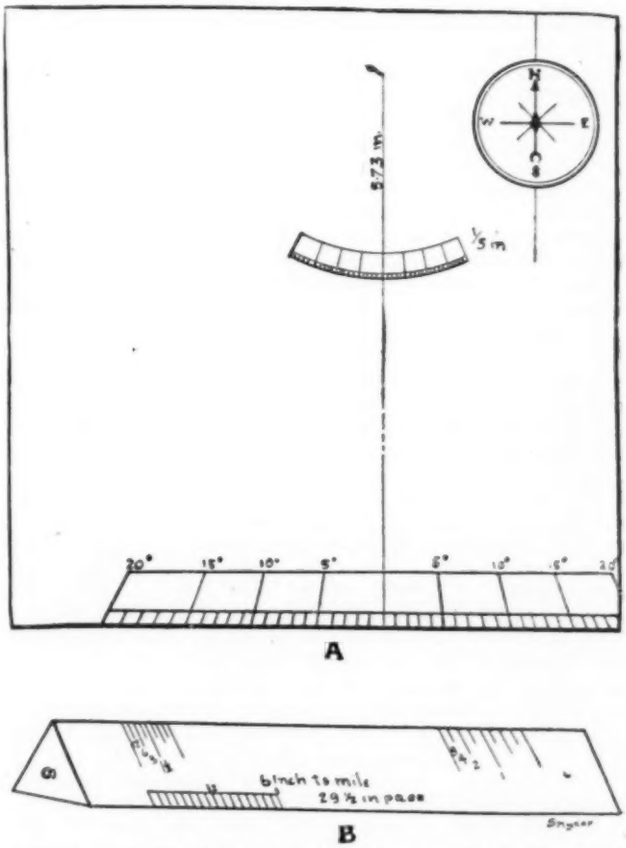


Fig. 1.—(*A*) This is merely a piece of a 1 by 12 inch board with angles of slope marked on it. With a plumb bob and line attached as shown, and sighting at an object over the top of the board the angle of elevation of the object is registered by the plumb line. Knowing this angle and the distance to the object, the elevation of the object can be readily ascertained from the degree scale on the alidade. (*B*) The alidade is a triangular ruler used for sighting at objects and drawing lines (rays) on the map. It has on its faces one's pace scale; also a degree scale, an inch scale and a hundred yard scale.

at which it might be desirable to establish sanitary formations can often be determined by reference to maps.

As the shortest road to map reading is through map making, the essentials of map making will be outlined. Ordinarily in two afternoons the general principles of map making can be mastered. In working out the principles of map making the essentials of map reading will be absorbed unconsciously.

ARTICLES NEEDED FOR MAP MAKING

Compass, alidade, slope board, tripod, paper, four thumb tacks, pencil with eraser, a pace tallier (con-

venient but not essential), a list of pace scales for paces from 28 to 36 inches (convenient but not essential) are needed.[1]

PROCEDURE

1. *Normal Step or Pace.*—This is determined in the following manner and marked on the alidade: One walks four times over a measured one-half mile course and counts the number of one's steps each time. These are added together and divided by four to get one's average number of steps or paces per one-half mile. There are 31,680 inches in one-half mile. This number is divided by the foregoing average. This gives the length of one's pace in inches. All sketches made should be on the scale of 6 inches equal 1 mile. One's pace on the list of scales furnished is located and a corresponding scale on the blank side of the alidade is marked. This scale of one's paces is necessary in order to step off distances and place them on one's sketch.

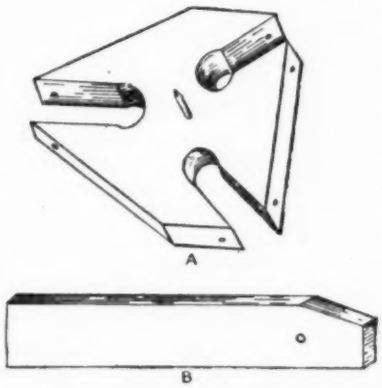


Fig. 2.—The tripod is easily made. A piece of board 2 by 4 inches, or preferably 2 by 6 and 6 inches long, is selected and three slots are made for the legs. Four strips of board about 1 by 1 by 4 inches serve as legs. With nails these are fastened into the slots. A nail is driven through the slotted piece from the bottom and projects through the top one-half inch. A nail hole three-fourths inch deep is made in the bottom center of the map board. A nail is driven through this hole and the tripod and the board are ready for setting up. *A*, head piece; *B*, leg.

2. *Slope Board and Tripod.*—A piece of 1 by 12 inch lumber about 1 foot long is taken for a slope board (Fig. 1). For a tripod three slender strips of wood about 4 feet long are chosen for the legs and are attached to a block of wood for the head piece, the legs being placed into slots and nails driven through them in order to hinge them. Through the center of the head piece, from below, a nail is driven and allowed to project through the upper side about one-half inch. A corresponding hole is made in the center of the bottom of one's map or slope board. This gives a pivot for one's map board on the tripod (Fig. 2).

3. *Degree Scale on Slope Board.*—One edge should be perfectly straight. A line perpendicular to this edge is drawn on the face of the board. On this line is drawn an arc of a circle with a 5.73 inch radius. The arc should extend about 3 inches on each side of the perpendicular, and the center of the circle should be on the perpendicular about one-fourth inch from the straight edge mentioned. Dots should be marked on this arc one-tenth of an inch apart, beginning at the perpendicular and going both ways. A pin is driven into the center of the circle. A thread 15 or 16 inches long should be tied to the pin. The thread is drawn taut, covering the perpendicular. It is then moved either way, still taut, until it covers a one-tenth inch dot. Then a dot is placed where the thread crosses the edge, opposite the straight edge. This should be done for fifteen or twenty dots on each side of the perpendicular. At each dot so made a line is drawn one-fourth inch long toward the center of the circle, except that at every fifth dot a line one-half inch long should be made. The long lines should be numbered 5, 10, 15, etc., on each side from the perpendicular as zero. This board is now a slope board for marking the degree of slope of hills, valleys and other objects (Fig. 1 A). When the alidade or a piece of lead is tied to the thread mentioned, acting as a pendulum, and a sight is taken along the straight edge of the board, the thread marks, on the edge opposite, the degree of slope of the hill, or other object sighted. The thread is caught at the proper point by pressing it against the board with the finger. If the elevation on which one stands is known or assumed, and the distance to the top of the hill is known, the elevation of the hill is readily calculated from degree scales on the alidade. The distance to the top of the hill can be readily ascertained by pacing, or by intersection or resection, as will be explained later.

4. *The Compass and Orientation.*—The compass points to the magnetic north, which is in Greenland. The variation from true north is called "declination of the needle." It can be readily ascertained by finding the true north, or from official maps. It is negligible in sketches. In order to make accurate sketches, whenever the map board is on its tripod, the board must be oriented, that is, it must be set in such a manner that directions on the map and the ground coincide. This is easily done by placing a compass on the board and getting its needle in line with a line previously drawn on the board. For convenience it is well to countersink a hole, compass-shaped, at one corner of the board and to draw an arrow passing through the needle pivot. The point of the needle must be kept on this line, and its north point must always point toward the arrow point. When this is done, the map and the ground directions always coincide.

5. *Critical Points.*—These are prominent points on the ground selected as points for exact location on the map. These points are located by (a) pacing, (b) intersection, (c) resection.

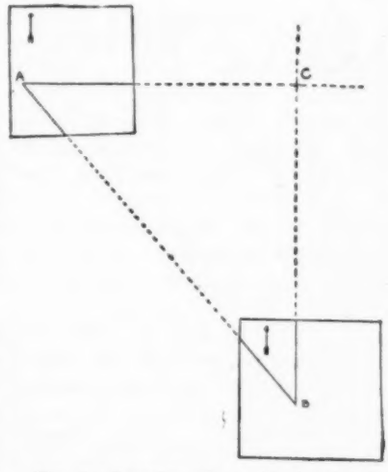


Fig. 3.—Location of a critical point by intersection. It is desired to locate point C on the ground at its proper place on the map. The map board is set up at A. The board is oriented. A ray is shot at B and C. One paces to B. The distance as laid off A to B on one's map. The board is again oriented. A ray is shot at C. The point at which the rays A-C and B-C cross is the proper place for C on the map.

(*a*) By Pacing: A starting point is assumed and marked with a sharp pencil point on one's map (board oriented) with the map paper, and the country to be mapped, before one. From this point (A) a light line is drawn on the paper (called a ray) directly at the object (B), by sighting across the top of the alidade and pivoting the alidade on the map point by means of a sharp pencil. The alidade should always be kept at the left of the pencil. Before the ray is drawn, the needle should be again examined to be sure that orientation is exact. If it is not exact, it should be made so, and a new sight taken

1. Alidade and list of pace scales can be obtained from the book department, Army Service Schools, Fort Leavenworth, Kan., price 50 cents.

across the alidade. A ray should never be drawn on the map without a final look at the orientation in order to insure accuracy. When this ray is drawn (a very light line, so it may be erased if need be) one picks up the board and tripod and paces to the critical point, counting the steps. This distance is laid off on the ray by using the pace scale on the alidade. All superfluous rays are now erased.

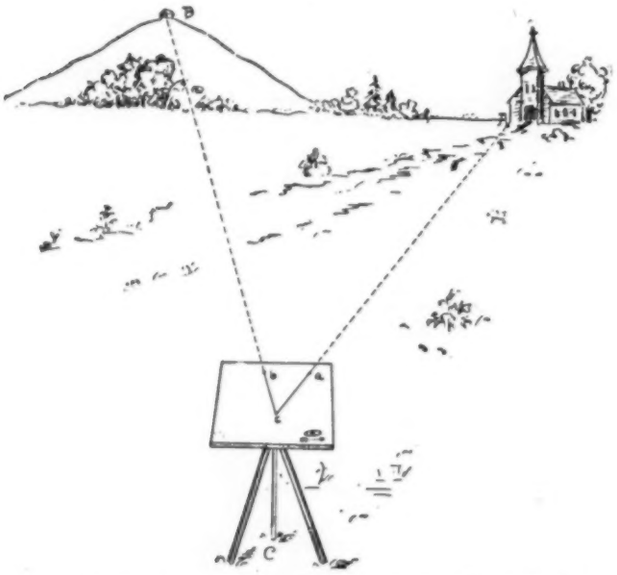


Fig. 4.—Location of a critical point by resection. This method locates on the map the point at which one is standing on the ground. Two critical points visible on the ground must already be located on the map, for example, the house A and the church B. The board is oriented. One pivots the alidade on *a* and sights at A, and standing at the rear of the map board a line is drawn along the alidade from *a* toward the body. This is repeated at *b*. The point at which *a-c* and *b-c* cross locates on the map the point at which one stands, or point C.

(*b*) By Intersection: We will assume that point C is off to one side of A and B, and that its location is desired. While at A a ray is shot at C (board oriented). Also when at B, a ray is shot at C (board oriented). Point C is the point at which these two rays intersect. A sharp point is made there, and marked C. These two rays (and all "dead" rays, that is, rays no longer needed) are erased, in order not to clutter up the map with useless lines (Fig. 3).

(*c*) By Resection: Often it is desirable to locate on the map the point at which one is standing on the ground. We will assume that one is on the ground at point C. The board is oriented and the alidade is pivoted on point A on the map by sighting at point A on the ground. A line is drawn from point A on the map, toward one's body, likewise another line is drawn from point B on the map. The point at which the two lines cross is point C. This point and all critical points are marked when found with a sharp pencil point (Fig. 4).

6. *Determination of Elevations.*—If it is unknown, an elevation is assumed for one's starting point. For example, point A may be assumed to have an elevation of 500 feet. It is desired to get the elevation of point H. Point H has already been located on the map by one of the three methods mentioned—pacing, intersection or resection. While at A the angle of elevation of H is obtained. We will assume it is 8 degrees. The 8 degree scale on the alidade is then found. Every time the distance for 8 degrees on the scale goes into the distance between points A and H on the map is a rise of 10 feet on a 6 inch to the mile map. We will assume the map distance from A to H is ten 8 degree distances. Then point H is 80 feet higher than point A and the elevation of H is 580 feet. Of course, if H is lower than A, it is 80 feet lower, and its elevation is 420 feet.

7. *Contours.*—These are lines cut on the earth's surface by imaginary horizontal planes at equal intervals from each other. They are needed on flat maps in order to show the elevation and shape of hills and valleys. All points on a contour line are of equal elevation. When contours are equally spaced the slope is uniform. Contours close to each other indicate a steep hill; far apart, gentle slope. Contour lines pass obtusely around slopes and acutely up streams or dry water courses. When the elevation of a critical point from another point is to be ascertained, the slope of the land should be noted, and for every intermediate contour indicated a dot should be placed. This should be done regularly. When the location and elevations of all critical points are determined, one should dot between them where contours would pass; all dots of equal elevation should be connected, and one's map is contoured. It should then give an accurate reproduction of the land mapped.

8. *Scales.*—In United States Army field sketches the normal system of scales is used. That means that the distance between contours called V.I. (vertical interval) varies regularly according to the scale of the map. If 1 inch on the map paper equals 1 mile on the ground map, the V.I. is 60 feet. If 3 inches on the map equal 1 mile on the ground the vertical interval is 20 feet; for a 6 inch map the V.I. is 10 feet, etc. Sixty divided by the scale of the map gives the vertical interval. This normal system was adopted in order to use the same degree scale for various sized maps. The distances on the degree scales on the alidade vary inversely with the angle. Those distances are called map distances between contours or M.D.'s. The M.D. for 1 degree is 0.65 inch. All other M.D.'s can be derived from this if no alidade is at hand. A pace scale is necessary in order to have a ready means of measurement of ground distances, readily convertible from the map into distances. Animal scale is the pace

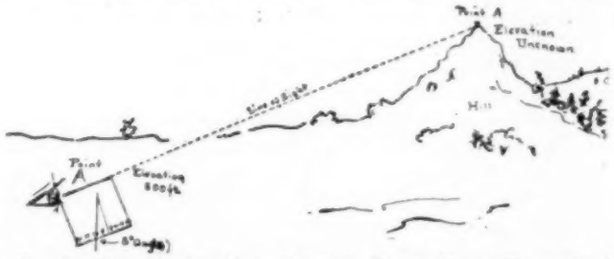


Fig. 5.—Determination of the elevation of any object. If not already known, an elevation for the point A where one stands is assumed. With the map board one sights at H, the point whose elevation is desired. The distance to H has already been determined by pacing, intersection or resection. We will assume the angle of sight is 8 degrees. From the alidade the elevation of H is then easily determined.

scale applied to a riding horse. The time required for the animal to go fixed distances at a walk or trot is, however, used as the standard unit instead of the length of its pace.

9. *Base Line.*—Any paced distance is a base line. A line is absolutely necessary in starting a map, before points can be located by intersection. Two critical points visible at the point to be resected and correctly located on the map are always necessary before a point can be located by resection. In intersection and resection the angle between the rays at the critical

point to be located must never be less than 30 degrees or greater than 100 degrees, as otherwise the rays are so nearly parallel that great error is possible.

10. *Conventional Signs.*—These are certain abbreviations or marks used in mapping to avoid writing out words—a map shorthand, as it were. They are very simple and are usually self explanatory.

11. *Types of Sketches.*—There are four types of sketches—road, position, outpost and place sketches. (*a*) The road sketch is a sketch of a road and an area extending about 400 yards on each side of it. As a rule all details needed can be obtained from high places in the road. It may be necessary at times to go to high places near the road. Bridges, fords, ferries, houses, woods, cultivated fields, nature of crops and soil, villages, high hills, valleys, streams, and other points of importance are noted on the sketch. These objects should be noted in all sketches when possible. (*b*) The position sketch is an area sketch of such a nature that the sketcher can visit, if desired, any point in the area to be sketched. (*c*) In the outpost sketch the observer can visit only the land in the rear of his outpost. (*d*) The place sketch is made from a single point of observation, as a tree or a high hill. In this sketch the observer must estimate distances. Sizes of known objects assist greatly in estimating distances. Distances between telegraph and telephone poles are also of great value.

12. *Comparison of Work.*—We will assume that ten men are mapping the same area, all having a different space but mapping on a 6 inch scale. When the maps are completed all similar distances should measure exactly the same on every map. Contours should look approximately alike.

13. *Sketching without Special Equipment.*—Articles needed: a watch, a piece of paper, a pencil and a flat surface for holding the paper. One's pace is determined and placed on a piece of paper on a 6 inch scale. If one has not this scale at hand, one should be devised. Means are readily at hand everywhere. Each time one starts to work on one's map, the map paper should be oriented by means of a watch (accurately recording sun-time, of course) as follows: The hour hand is pointed at the sun. Midway between the hour hand and 12 o'clock is the north and south line. The position of the sun will tell you which end is north. To get the hour hand pointing directly at the sun a match, or other straight slender object, is held so that its shadow falls across the face of the watch. The hour hand, pointing at the sun should lie directly in this shadow. Now one proceeds to make one's map by pacing, intersection or resection. A slope board is made on one's flat surface and a tripod and alidade are improvised if elevations are desired. Degrees of slope are readily placed on the alidade by remembering that 0.65 inch is the M.D. for a 1 degree slope; half that is the M.D. for a 2 degree slope, etc.

14. *Boundary.*—The boundary of any map sketched is made by connecting outermost critical points by straight lines.

15. *Data.*—When a sketch is completed the following data should be placed on it:

1. Name, rank and organization of sketcher.
2. Date of sketch.
3. Location of sketch.
4. Map scale and arrow pointing to magnetic north.
5. Elevation in figures of critical points if elevations are taken. Also contours.
6. A careful outline of water courses and dry runs.

MAP READING

As the principles of map making can be learned in a few hours it is always advisable to learn map making before map reading. When the anatomy of the map is mastered, map reading is simple. Hill slopes should be thought of in degrees so that by looking at the map one can say: That is an 8 degree hill, a 5 degree hill or whatever its height may be. This is of great value in determining whether the hill, ravine, or whatever topographic feature it may be gives protection from rifle or artillery fire. Slopes of the fall of bullets and shells should be learned in order to complete this valuable information.

VENEREAL DISEASE AND THE NEW ARMY

WILLIAM LYSTER, M.D.
Lieutenant-Colonel, Medical Corps, U. S. Army
LONDON, ENGLAND

What will be the history of these diseases in the new Army now being raised? This question is of utmost importance to the country at large for these reasons:

1. These diseases constitute the greatest factor producing nonefficiency in armies in training.

2. The increase of damage to the national health through the spread of these diseases.

3. The unprecedented opportunity afforded by the concentration of such a large proportion of the male population for public education on these diseases.

War always means the interruption and dislocation of existing conditions. The greater and larger the war and the larger the proportion of the population involved, the more extensive is the effect on the national life.

The history of these diseases in the armies, and more particularly in our own, will give us a safe indication of what may be reasonably expected under the same conditions. But today we are in possession of knowledge and agencies that were wanting until recently. What these are and what their effect is will be mentioned shortly.

The history of venereal disease in the American Army can be most rapidly grasped by studying the annual admission rates for these diseases as shown in charts or tables. I have drawn a curve as made by these annual rates from 1888 to 1915, inclusive. The rates are those to be found in the annual report of the Surgeon-General to the Secretary of War.

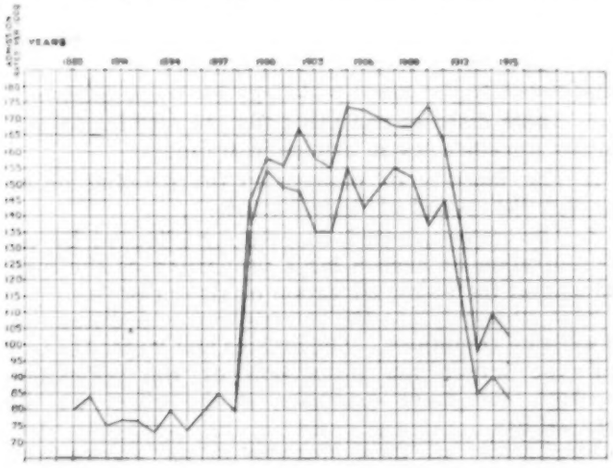
The chart divides itself rather naturally into three parts representing stages radically different in character. The rates for these distinct stages differ markedly.

The first stage, from 1888 to 1898, covers the decade in which the U. S. Army was strictly continental. It was scattered in small commands mostly west of the Mississippi and in the southwestern states. The rank and file were, like the officers, professional soldiers and the age and length of service made these men "old soldiers." For the bulk of the troops the contact with cities and towns was casual and not daily. No regular physical inspection with special reference to venereal disease was frequently made, as is now done fortnightly. Ready and exact means of diagnosing syphilis did not exist. The Wassermann reaction and

the cause of syphilis were not known. Naturally, as in civil practice, many cases of this disease appeared under other names, as it was not recognized, for instance, rheumatism and heart disease of some kind. Any one who reads the oration delivered by Sir William Osler before the London Medical Society, published in the *Lancet*, or having heard it delivered, as I had the privilege of doing, will understand the truth of this statement.

During this decade, there was no systematic centrally controlled propaganda to reduce venereal disease. The very attitude of the profession was different from what it is today. A deprecatory, sub rosa, hush atmosphere surrounded the subject. One looks in vain for a discussion of venereal diseases in the lay press. Mention of them was indirect even in the most bold quack advertisements. The word "syphilis" is not to be found in print outside of medical publications.

With these conditions characteristic of this decade in the Army, namely, isolation, no regular inspection



Curves showing the incidence of venereal diseases in the United States Army from 1888 to 1915. The rapid decrease in venereal diseases for the years from 1910 to 1913, following systematic measures instituted by the government for their control, should be noted.

The lower line shows rates for enlisted force in the United States. The upper line shows rates for all enlisted force both in United States and abroad.

1888-98.—During this decade the Army was stationed throughout the U. S., principally at small points. No compulsory physical inspection; no systematic propaganda to reduce venereal disease. The rates represent practically those patients unable to do duty. Cases not treated or in those doing duty were usually not recorded.

1898.—Spanish War Militia called into service.

1898-99.—Great change in Army. Marked expansion. Old soldiers disappear. Volunteers come in. Young recruits sent to Cuba, Porto Rico, Philippines.

1899-01.—Philippine Insurrection Troops in Cuba, Porto Rico, China.

1901-09.—High rates prevail in U. S. and abroad.

1909-11.—Principles of preventive medicine applied. Prophylaxis urged.

1911.—Syphilis increases. Wassermann test used in diagnosis.

1912.—Systematic measures. Fortnightly physical inspections and prophylaxis enforced by G. O. May 31. Pay stopped G. O. 31.

1914-15.—Concentration on Mexican Border.

for veneral disease, no systematic campaign to reduce the amount of venereal disease, and, in addition, the indefiniteness in diagnosis inseparable from the methods of that time, the average admission rate for the period may be taken as seventy-eight per thousand.

The second stage, from 1898 to 1908, embraces the decade in which there were radical changes in army life introduced by the Spanish War. Conditions of war necessitated a sudden increase in the Army. Naturally new and untrained material was brought in. A dropping out of the "old" soldiers took place. The tropics were penetrated. The isolation of the old Army in the West was a thing of the past. There was contact with cities, either from camps near them, or by waiting in them for transportation overseas, as at San Francisco and Manila, and finally there was association in the tropics with people on a lower social plane.

The most important factors are the breaking away from the home ties and control of a large number of young men, and their projection into surroundings to which they were unaccustomed.

This stage shows a double line. The outer or higher indicates the rates for the Army both in the United States and in the new tropical dependencies, Porto Rico, Cuba and the Philippine Islands. The inner or lower line shows the rates for the U. S. Army in the United States. This line affords a comparison with the line to the left for 1888-1898. The conditions encountered in the tropics make the difference between the outer and inner lines. Lack of regular physical examinations and systematic propaganda against venereal disease characterize this period the same as the first. But the rates, which had steadily mounted until they were almost double the recorded rates of the first decade, were so preposterous that attention was concentrated on them, owing to the nonefficiency produced by these diseases, which, during several years, was about equal to the five diseases next in order of frequency.

Individual spasmodic effort to remedy conditions began. The post surgeons undertook various measures to restrict these diseases. Their efforts were studied by the Surgeon-General's Office, and gradually a systematic campaign was developed, the good results of which appear in the third stage. This was largely assisted, and made possible, in fact, by the discoveries of science—which were promptly utilized.

From 1909 to 1911, the principle of preventive medicine began to be applied extensively. Metchnikoff's experiments relative to the prophylaxis of syphilis subsequent to Schaudinn's discovery had been published. They bore fruit rapidly in the Army, which was affected with such a high venereal rate, and various experimenters in the Army, prominent among them Colonel Mans and Colonel Howard, obtained notable results in lowering the veneral rate by devising satisfactory prophylactic measures.

In the early part of the third stage, the introduction of the Wassermann test and vaccine in the treatment of gonorrheal arthritis is an outstanding feature. The Wassermann test tended to give an increase in the ratios owing to the more accurate means of diagnosis afforded. This system of recording cases was still more marked in 1912, when fortnightly physical inspection was ordered. When carefully done, this permits the discovery of practically all cases of venereal disease except some cases of syphilis. The latter cases, if the patients ever go to the hospital, are now pretty surely found by the use of the Wassermann test, which is ordinarily employed in all obscure or doubtful cases.

Could these methods, fortnightly examinations and the Wassermann test, have been applied in the first stage, from 1888 to 1898, the rate would have been much higher, possibly as much as 110 or more admissions per thousand; for the rates in that period indicate practically only those men who were unable to perform duty and only for that reason appeared on the sick report. At the present time every case appears in the rates whether the man is performing duty or not.

The results of spasmodic and uncentralized efforts to reduce venereal disease appeared in 1911. The effect of centralized and official efforts were apparent in 1912, when the rate was shown to have fallen for the entire Army nearly forty points in two years. Inspection, prophylaxis, and loss of pay for disease not in line of duty are the prominent features. Men and officers who wilfully become incapacitated through ill health are subjected to loss of pay. The wise congressional action which permitted this step certainly should be retained. Its effect has been most powerful and far-reaching and tends to restrain the soldier from dissipation. As long as he cannot perform his duty, he certainly is not entitled to pay when he has wilfully disregarded orders and failed to take advantage of protective measures that would save him from ill health and the goverment from the loss of his services.

The line on this chart for the years from 1910 to 1913 is an outward and visible sign of some of the most creditable work ever accomplished by the Medical Department of the Army. It is also an example of the practical value of applied science. That this improvement was naturally assisted by the cessation of campaigns of any size in the tropics is true, just as, conversely, the concentration of the Army in the United States on the southern border and the dispatch of a part of it to Vera Cruz gave a higher rate in 1914. This, however, was probably aided by one of those reactions so frequently seen in all propagandas.

Now as to our new Army and the future: Higher rates will probably prevail for some time, but hope is backed by knowledge that we have the means, if we can apply them, of controlling this great producer of non-efficiency in armies. The education of the new medical officers is the first condition to success, the education of the line officers as to the supreme importance of the antivenereal campaign is the second, and the education of the enlisted men as to the necessity of prophylaxis after exposure is the third.

This is a practical question and no longer a theory that confronts the new Army. Its efficiency, its very numbers, are dependent on its health. The greatest enemy to its health is venereal disease. What will the answer be to the challenge that it is to meet within the next few months?

A continuation of the orders and methods successful in the Army from 1908 to date will make a successful answer to that challenge of disease. But no misleading and unpractical fanatics must be permitted to have a hand in this question of national efficiency any more than they shall be permitted to dictate as to the manner of making our gunpowder.

The gonococci have probably quite as ancient and respectable a lineage in biology as the pneumococci. The same relentless scientific measures that are used in the one case must be applied in the other, and no false sentiment must be allowed to interfere in the efficiency of their application. Prophylaxis has shown its great and proved value. As long as the instinct of procreation is as omnipresent and as powerful in nature as it is, it must enter into our problem.

Let those who regard veneral disease as a divine punishment recall that smallpox and other diseases have been at various times, and are even today by some regarded as acts of God. If fanatics must interfere in this beneficial work of reducing venereal disease, let them concentrate on an effort to remove the sexual appetite rather than insist on spreading venereal disease, even to the innocent, by abandoning one of the most useful agents in preventing it.

The responsibility devolves on the new medical officers to begin this necessary and beneficial work by thoroughly informing themselves, and then they must carry out the existing orders looking to the prevention of these diseases. All this must begin at home, and must become ingrained in the Army before it can maintain its health in the lands in which it is to justify its existence.

Adastral House, Victoria Embankment, E. C. 4.

THE VENEREAL DISEASES

COMPLICATIONS OF GONORRHEA

FOLLICULITIS

(Continued from page 1171)

NOTE.—This is the fifth article of the series on the management of venereal diseases with special reference to military practice. The first article on "The Diagnosis and Treatment of Syphilis" appeared, Sept. 15, 1917, page 907; the second, on "Chancroid," September 22, page 1004; the third, on "Balanitis Gangrenosa," September 29, page 1080; the fourth, "The Treatment of Gonorrhea," October 6, page 1168. The final article, including a program for the control of the venereal diseases and instructions to those having syphilis or gonorrhea, will appear next week. The articles have been prepared under the direction of the Surgeon-General by the Advisory Committee on Venereal Diseases, Dr. William Allen Pusey, Chicago, chairman; Dr. Francis R. Hagner, Washington, D. C.; Dr. Grover W. Wende, Buffalo; Dr. Sigmund Pollitzer, New York, and Dr. Henry H. Morton, Brooklyn, with Lieut.-Col. F. F. Russell in charge of infectious diseases. The series is published with the permission of the Surgeon-General. The articles are now being prepared in the form of a pocket manual, with flexible cloth cover. The book will be available shortly, price 25 cents.—ED.

Suppuration of one of the urethral follicles with abscess formation occasionally occurs in gonorrhea. If it does not open into the urethra by the time fluctuation occurs, it should be incised. It is important to incise from within the urethra through a urethroscope if the abscess is connected with the urethra. Otherwise a urinary fistula may result.

COWPERITIS

This condition should be treated by incision from without.

GLANDULAR URETHRITIS

Many intractable cases of gonorrhea lasting for years in spite of constant treatment are caused by a chronic inflammation of Morgagni's crypts. Such cases show few symptoms. There may be merely a morning drop of moisture at the meatus. But they are characterized by exacerbations of the discharge after slight provocation, with a free discharge of pus containing gonococci, which leads the patient to believe that he has acquired a fresh infection. Urethroscopic examination shows the mouths of a few of the crypts to be open and pouting, with red and slightly elevated edges. In other cases the mouths of the crypts are occluded by a growth of epithelium. When the crypts are affected the gonococci may remain in them for years and the case remains infectious.

These cases should be treated by dilatations with a full sized sound followed by irrigations. When the mouths of the glands are occluded by the growth of epithelium, dilatation of the urethra opens them and

forces out the purulent secretion. The irrigating fluid enters the cavities and acts on the chronic inflammatory processes within the glands. In that form of inflammation in which the mouths of the glands are held open and the entire crypt is stiffened and inelastic from the periglandular infiltration, dilatations cause the absorption of the infiltrate around the glands and promote a return to normal conditions.

When after sufficient treatment by dilatations and irrigations, it is found by urethroscopic examinations that a few glands still remain chronically inflamed and suppurating—conditions which supply foci of infection—these should be destroyed. This can be accomplished by bringing them into view with the urethroscope, and introducing a galvanocaustic needle. The cauterization must be very superficial and rapid; otherwise there will be danger of stricture formation. Three or four crypts may be destroyed at a sitting. It is possible by destroying the glands harboring the gonococci to cure in this way a chronic gonorrhea of years' standing which has resisted all the usual forms of treatment.

CHORDEE

The patient subject to chordee should empty his bladder just before going to bed; should sleep in a cool place, lightly covered; and, to avoid sleeping on his back, should tie a towel around his waist with a knot at the back. Before going to bed the penis should be given a prolonged immersion in hot water. When the patient wakes with chordee, he should get out of bed and immerse penis and testicles in cold or hot water, and before going back to bed should empty the bladder. He should be warned of the danger of "breaking" a chordee. In severe cases sedatives are necessary, potassium bromid, 2.0 gm., or camphor monobromate 0.3, gm., in the afternoon and before going to bed, are useful; in extreme cases a morphin suppository may be necessary.

EPIDIDYMITIS

Immediately on the development of epididymitis all injections or instrumentation of the urethra must be stopped, the patient be confined to bed and put on a light diet. The testicles should be elevated by a bandage going under them and over the thighs, and hot applications should be made. Hot sitz baths for half an hour three times daily are soothing and hasten recovery. If the symptoms are severe, epididymotomy may be performed. This immediately relieves pain and hastens recovery.

In a few days the acute stage passes. The urethral discharge is then likely to recur, but local treatment of the urethra must be resumed only after a considerable period of rest and with the greatest caution. A suspensory bandage should be worn until the patient is entirely well. There is in these cases a chronic inflammatory exudate in the epididymis, which in time often disappears. Massage of it may hasten its absorption.

PROSTATITIS

Acute Prostatitis.—The indications are (1) to lessen the severity of the posterior urethritis; (2) to prevent suppuration of the prostate; (3) if pus forms, to evacuate it promptly by incision.

The patient should be put to bed, sandalwood oil administered, and, if necessary, the pain and tenesmus controlled by opium suppositories. Locally either an ice-bag or hot poultices are applied to the perineum, a safe guide for the choice between hot and cold applications being the amount of comfort which is given to the patient. Hot sitz-baths of from one-half hour to an hour's duration two or three times daily are always indicated. Irrigation of the rectum with hot normal saline solution for half an hour at a time may be used instead. A rectal prostatic irrigator or in its absence a return flow catheter is introduced into the rectum, and a continuous flow of normal saline solution, as hot as can be borne, is passed through it.

If retention of urine should occur, it may be necessary to introduce a catheter, but this should be done only when absolutely necessary. Before catheterizing, the urethra should be well irrigated to free it from pus. One c.c. of 2 per cent. cocain solution may be injected into the urethra to relieve pain and facilitate catheterization.

Prostatic Abscess.—When a very limited area of suppuration of the prostate is present, involving perhaps two or three of the prostatic tubules, the temperature is only slightly elevated, and the local symptoms are not marked. After two or three days the temperature becomes normal and the tenesmus and frequent urination disappear. In such cases an incision into the prostate is not required, for the minute abscess generally ruptures into the urethra and the sinus fills in by granulation.

If, on the contrary, the symptoms do not improve within the first week, but the fever continues, the local symptoms grow worse, and rectal examination shows an increase in the size of the inflamed prostate, it is evidence that an abscess is forming. This serves as an urgent indication to evacuate the pus; for if the pus is allowed to break through the capsule of the prostate, it will burrow through the tissues and may cause urinary infiltration and pyemia, or, at least, a fistula which will not heal without operation. In these cases immediate surgical measures are indicated.

Chronic Prostatitis.—In almost every case of chronic gonorrheal urethritis the prostate is found to be involved. Aside from its frequency, chronic prostatitis is perhaps the most important complication of gonorrhea; for the reason that the gonococcus, with all its infectious qualities unimpaired, may be retained for years in the diseased tubular glands of the prostate without its presence being suspected. Probably most of the cases in which wives are infected with gonorrhea by their husbands come from uncured prostatitis. Chronic prostatitis is also important on account of the profound disturbance of the nervous system and the impairment of the sexual function, which it occasionally produces.

Chronic prostatitis frequently originates in an attack of acute prostatitis, or it may be the result of a slow insidious extension through the prostatic ducts of an inflammation from the posterior urethra.

It is important in the treatment of chronic prostatitis to secure the confidence of the patient and encourage him by explaining that his condition is one which can be cured; that he is not impotent or likely to become so, and that his nervous disturbances are due to a purely local condition which is not dangerous. At the same time he should be informed that the treatment calls for great patience on the part of both physician and patient, and may extend over several months.

The first indication is to improve the general condition of the patient by a proper regimen. Constipation is generally a prominent symptom, which is best treated with saline cathartics, because they have

some effect in relieving pelvic congestion. All sorts of erotic excitement should be interdicted on account of their effect in inducing congestion of the prostate. Coitus should not be permitted, both because of its ill effect on the diseased prostate and because of the certainty of spreading the infection.

The most useful local measure is the emptying of the prostatic tubules of their retained and thickened contents by rectal massage, practiced two or three times weekly. In this procedure both lobes should be massaged from above downward and the manipulation should not be very vigorous, the object being to force out the prostatic contents by moderate pressure. Massage of the prostate is not well borne by all patients; and, if it produces irritating symptoms, it should not be persisted in. In order to lessen the danger of epididymitis from prostatic massage, it is advisable to irrigate the urethra and fill the bladder before massage. For this purpose, if gonococci are present, a solution of silver albuminate, 1:1,000, should be used; if they are absent, solutions of silver albuminate, 1:4,000, or oxycyanid of mercury, 1:4,000, may be employed.

Treatment by massage may be persisted in until improvement in prostatic symptoms ceases. At this point it is advisable to stop treatment for a month. If after this intermission the remaining evidences of prostatitis have not disappeared, a course of massage may be repeated.

Most cases of prostatitis suffer from chronic posterior urethritis, and it is important not to overlook this condition. If there is a great deal of catarrhal inflammation, with much pus formation, irrigations are advisable. But, if the suppuration is only slight, instillations into the posterior urethra are indicated. In most cases 1 per cent. or 2 per cent. of silver nitrate solution may be used, but in old and obstinate cases stronger solutions are called for and the strength may be gradually increased to 5 per cent. Strong solutions can be better applied through the urethroscope.

In nearly every case of chronic prostatitis the verumontanum is diseased and requires particular attention. The best method of treating it is to apply a strong solution of silver nitrate — 20 per cent. — directly on it through the urethroscope. Some reaction follows this application, the discharge increases, and the patient has frequent urinations, often followed by bleeding. After eight or ten days it is safe to make another application. Tincture of iodin may be used if the silver nitrate causes too much pain. After half a dozen strong applications, the verumontanum will probably return to normal; but if chronic posterior urethritis with prostatitis has existed for a long time, a submucous infiltration will have occurred, which also demands treatment by posterior dilatation.

SEMINAL VESICULITIS

Acute Seminal Vesiculitis.—The general treatment of acute vesiculitis is the same as that for acute prostatitis, with which it is usually associated. Injections into the anterior urethra, of course, are contraindicated; but above all things, any attempt at massaging or stripping the vesicles should be avoided.

Chronic Seminal Vesiculitis.—Chronic vesiculitis may originate from an acute attack of vesiculitis which does not undergo resolution; but as a rule it develops insidiously, as the result of the extension of a chronic inflammatory process which begins in the posterior urethra and extends through the ejaculatory duct. The ejaculatory duct is never occluded by the changes; throughout the whole course of the disease it remains patulous, and sterility does not occur from this cause.

Chronic seminal vesiculitis presents itself in two variations:

1. Atonic vesiculitis, in which there is chiefly an atony of the muscular fibers composing the walls of the vesicle.

2. Inflammatory vesiculitis, in which the walls of the vesicles are thickened and indurated as a result of inflammation, which may be simple, gonorrheal, or tuberculous in origin.

Either form of vesiculitis may exist by itself; but usually there is a combination of atony and inflammation of the vesicular walls.

Treatment.—The treatment consists in stripping or expressing the contents of the vesicles once in five to seven days. Stripping empties the vesicles of their inspissated contents, without forcing the muscular fibers to contract; and, by the relief of distension and the rest thus afforded them, the muscles recover their tone. The inflammatory thickening around the vesicle is absorbed as a result of massage.

Contraindications to stripping are: (*a*) the existence of acute vesiculitis; (*b*) blood in the expressed material, or (*c*) excessive tenderness. With these conditions present, there is always danger of setting up an epididymitis.

In chronic vesiculitis the posterior urethra should not be overlooked, but should receive treatment, with irrigations or instillations or by applications made through the urethroscope as outlined under chronic prostatitis. It is desirable, however, not to apply local treatment to the posterior urethra and massage the vesicles at the same sitting, but rather to allow a couple of days to intervene.

The duration of treatment must be protracted, for it requires from two to twelve months to effect a cure. In obstinate cases characterized by marked sexual neurasthenia or intractable gonorrheal rheumatism, frec incision into and drainage of the seminal vesicles may be demanded. This is a procedure requiring expert skill.

GONORRHEAL INFECTIONS OF SYNOVIAL MEMBRANES

The most frequent metastasis of the gonococci is seen in the infection of the synovial membranes (arthritis, teanosynovitis, bursitis), usually developing in the third week of the disease, after involvement of the posterior urethra. Traumatism may be a predisposing cause in this condition.

It is well in this group of cases to call in an orthopedic specialist for the local treatment of the infected joint. But it must not be forgotten that the most important factor in treatment consists in the removal of the foci of infection in the urethra or its adnexa.

The treatment should be carried out along the lines already suggested for the treatment of these lesions. Vaccines are efficacious in some cases, in others operation for drainage of the seminal vesicle or prostate may be indicated; this latter requires special skill in genito-urinary surgery.

GONORRHEAL OPHTHALMIA

EVERY CASE OF ACUTE CONJUNCTIVITIS IN A GONORRHEAL PATIENT IS A CONDITION REQUIRING EXPERT ATTENTION, AND SHOULD BE IMMEDIATELY REFERRED TO AN OPHTHALMOLOGIST.

(To be continued)

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SATURDAY, OCTOBER 13, 1917

HOME-CANNED FOODS AND BOTULISM

The still widespread belief that food poisoning of the sort attributable to bacterial products taken in with the food is associated almost exclusively with animal products seems to demand correction, particularly at present. A warning of the unsuspected danger of poisoning from canned vegetables at a time when the food conservation propaganda has led to the preservation of foods of all kinds in thousands of homes in anticipation of the winter's needs has been uttered by Dickson[1] in a recent issue of The Journal. He asserts, on the basis of an investigation conducted at the Stanford University School of Medicine, that the frequency with which food poisoning is caused by the presence of the toxin of the *Bacillus botulinus* is probably very much greater in this country than has been generally believed.

This kind of food poisoning has most inaptly been termed botulism, in recognition of the assumption that it is due as a rule to the ingestion of infected sausage (*botulus*). The insidiousness of the menace is emphasized by the fact that food in which the offending micro-organism, the *Bacillus botulinus*, which produces the harmful toxin, has grown may not give any indication of being altered in a way that necessarily arouses suspicion. It should be clearly understood that botulism is an intoxication, not an infection.[2] Unlike most bacteria dangerous to man, the *Bacillus botulinus* appears unable to grow in the human body, and its injurious effect is therefore limited to the action of the toxin produced in foods outside the body. Fortunately this toxin, as it is currently stated, is readily destroyed by heat; hence there is a safeguard of the utmost value in serving only after heating all foods in which the danger may lurk.

The investigations of Dickson have now brought to light an unexpected number of known and hitherto unrecorded cases of botulism occurring in the United States. This author has become convinced from his experiences that there have been many more outbreaks which have passed without recognition, and that if it were possible to follow up all cases of food poisoning in which the patients recovered, and all fatal cases in which the death certificates give the cause of death as ptomain poisoning or bulbar paralysis, a very large group of instances would be collected. Home-canned vegetables and fruits have often been the carriers of the danger. Dickson's work emphasizes what has been demonstrated before, namely, that not only can the micro-organism be grown readily in mediums containing vegetable foods, but also that it is a spore-bearing form which is quite resistant to heat. Taken in connection with the fact that *Bacillus botulinus* is an obligative anaerobe so that the conditions which exist in a sealed jar are suited for its growth along with production of the toxin, this explains why improperly sterilized canned products may develop food poisoning. It is unfortunate that the widely distributed directions for the so-called "cold pack" process of canning and preserving have not given more emphasis to the need of very efficient sterilization in the process. Jordan states that, to judge from the recorded outbreaks, domestically prepared vegetables and meats are more likely to give rise to botulism than those prepared commercially on a large scale. The general use of steam under pressure in the large canning factories affords a high degree of protection against the anaerobic bacteria and their resistant spores. Whatever the method of treatment, all canned or preserved food having an unnatural appearance, taste or odor should be rejected. Reheating of all prepared foods immediately before use is an additional safeguard. Foods, such as salads, composed wholly or in part of uncooked materials should not be allowed to stand overnight before being served.

1. Dickson, E. C.: Botulism, The Journal A. M. A., Sept. 22, 1917, p. 966.
2. A good account of botulism is given by E. O. Jordan in Food Poisoning (Chicago, 1917), from which some of the statements above are taken.

THE INHERITANCE OF STATURE

Growth is influenced by conditions that may be described as internal and external, respectively. One of the sets of factors thus concerned is constitutional; the other, environmental in character. Stature is determined by growth, and the question of the degree to which this feature of the individual is controlled by conditions of life rather than by hereditary considerations has been somewhat debated. As a recent writer[1] has pointed out, that there are hereditary factors involved in the differences in height of adults follows from the recognition of racial differences, for true racial characters are hereditary. Moreover, this hereditary nature has been popularly long recognized. Nevertheless, there is a strong tendency with certain persons to ascribe idiosyncrasies in stature almost wholly to peculiarities of conditions of development. The assumption of an inferior food supply as a cause of decreased stature in certain groups of population has often permitted its adherents to forget differences in blood in the unlike groups. The superior stature of

1. Davenport, C. B.: Inheritance of Stature, Genetics, 1917, **2**, 313.

the residents of the state of Kentucky has been ascribed to lime in the soil. The real reason, Davenport writes, why the people of Lexington, Ky., run tall is that they have a large proportion of Scotch blood, as they readily admit. One can test this conclusion by going to Scotland County, North Carolina. This is on the coastal plain where there is practically no lime. Here, at places like (Mac) Laurenburg, (Mac) Queensdale and Maxton (Mac's town) a nearly pure Scotch population is found—descendants of the Cape Fear River immigrants—and they are even taller than the people of Lexington. This experience strongly suggests that internal constitutional factors are more important than the ordinary environmental differences.

The experimental investigations of Osborne and Mendel,[2] among others, have indicated that growth can be suppressed by inadequacies in either the quantity or the quality of the ingested food. But even after the lapse of long periods of suppression of growth, that is, control of growth by external or nutritive agents, resumption of growth may take place if the dietary conditions are rendered favorable and adequate. This represents an extreme situation in some respects; and, as Davenport remarks, overfeeding, however much it may affect weight, has probably little effect on adult stature, though it may hasten growth and thus enable a man to reach precociously his predestined stature. The comparative lack of dependence of growth on quantity of food is shown by the fact that a bantam chick which is fed heavily never develops into anything but a bantam fowl. Admittedly the activities of various endocrine glands have an influence on the continuance and extent of growth. All manner of complicated hypotheses have been framed to account for abnormal growth and variations from the expected on the basis of unusual performances of some gland like the thyroid, pituitary or pineal structures, or the sex glands. But such variations may themselves well be hereditary or racial in character.

The modern study of genetics has made it possible to approach the problem of inheritance of stature in a thoroughly scientific way. Under the direction of Davenport[1] of the Station for Experimental Evolution at Cold Spring Harbor, N. Y., the Eugenics Record Office has undertaken an analysis of the obvious fact that persons differ in height. From this it appears that there is a clear correlation, though not perfect, between the average time of onset of puberty and the average age of slowing up of growth, and it is probable that the former controls the latter. In the case of woman, for example, an examination of the curve of growth brings out the important point that the growth processes, which are fairly progressive up to about 14 years, begin to be damped off after that period. Were the average rate of growth of the female between the ages of 8 and 14 maintained up to the age of 25 years, the average woman at that age would be over 210 cm. or 82½ inches or nearly 7 feet tall. The reason we do not reach such a stature is that our growth is damped off; and the principal damping off occurs as the germ glands ripen. Variations in adult stature may conceivably result from an acceleration or a retardation in this damping off process.

According to the acquired records, very tall men tend to marry a greatly disproportionate number of very tall women (and few or no very short ones); also tall men marry a disproportionate number of very tall women; medium men tend to marry women of the various statures about in their proportion in the whole population. Short men tend to marry short women and few very tall ones. Very short men marry an excess of short and very short women, and relatively few very tall and tall ones. In a word, persons of similar stature tend to marry each other; and extremes are more particular in this respect than those of medium stature. The progeny derived from matings of similars are less variable than those derived from matings of dissimilars. Thus the offspring of two tall parents are less variable in stature than those of two short parents. When both parents are "tall" or "very tall," and of tall stock, practically all the children are tall or very tall. When both parents are "very short" or "short," and of short stock, all children are short or very short. Shortness, according to Davenport, is due to certain positive factors that inhibit growth of the various parts. He regards it as probable that in all forms of dwarfing there are multiple dominant inhibiting factors. In the case of giants, when both parents are tall all of the children are tall; this indicates that the factors for tallness are mostly recessive—probably owing to the absence of inhibitions to prolonged growth.

It is an interesting additional feature of this new study in the heredity of stature that the inheritance of proportional length of the segments of stature is as evident as the inheritance of absolute differences. According to Castle,[3] to a large extent the factors that determine size are general factors affecting all parts of the skeleton simultaneously. Whatever special factors (if any) there are, which are concerned in limiting the size of particular bones, these can play only a subordinate part in determining size. According to Castle, the chief factors are plainly general factors, and control the growth of the body as a whole. Davenport's study seems to show, however, that general factors control growth only to a degree that may be estimated as less than half. On the other hand, special factors are present that control, independently, the growth of the various elements that go to make up stature. And the graduated nature of the variations of stature must be largely due to the number of these independently varying units.

2. Osborne, T. B., and Mendel, L. B.: The Suppression of Growth and the Capacity to Grow, Jour. Biol. Chem., 1914, **18**, 95.

3. Castle, W. E., and Phillips, J. C.: Piebald Rats and Selection, Pub. 195, Carnegie Institution of Washington, p. 51.

RECENT CONTRIBUTIONS OF CLINICAL CALORIMETRY

In the hands of American investigators, clinical calorimetry has yielded notable contributions. The Nutrition Laboratory of the Carnegie Institution, under the direction of F. G. Benedict at Boston, and the Russell Sage Institute of Pathology, under the guidance of Graham Lusk, have served as training stations. These endowed laboratories not only have enriched science with fundamental facts, but also have served as centers from which have gone young workers competent to appreciate what human calorimetry really means and to spread an interest in what it can contribute to medical progress.

The basal metabolism of normal man has been well established by the large number of carefully conducted measurements made in this country. It is not proportional to the body weight of the individual, but rather to the superficial area, as Rubner enunciated long ago. The universality of this conception is shown by the outcome of a large number of determinations showing that the unit of surface area eliminates the same amount of heat in the normal adult within 10 per cent. of a determined average. For adult men approximately 40 calories per square meter of body surface per hour may be accepted as approximating closely the normal basal heat production when the individual is resting and before administration of food in the morning. A thin person may produce 50 per cent. more heat per kilogram of body substance than an obese one; yet when the heat output per square meter of surface is calculated there will be little difference. The nitrogen content of animals has been shown by Moulton[1] to be almost exactly proportional to the surface area of the subject. Lusk[2] points out that if the nitrogen content is a measure of protoplasmic tissue, these experiments afford a striking confirmation of the doctrine of Voit that the heat production is proportional to the mass of living cells. In any event, thanks to these researches, the validity of the use of properly calculated heat output per unit of surface, that is, of basal metabolism, as a criterion of an altered metabolism in patients has now been established.[2]

Aub and Du Bois[3] have properly pointed out that in order to establish more fully the law that the total body metabolism is proportional to the surface area, it is important to establish the law not only for persons of normal size and shape, but also for those who are deformed. If the body surface is a tone index of the metabolism, Aub and Du Bois add, and if the body surface is accurately measured, then dwarfs or men with their legs cut off would show proportionately the same basal metabolism per square meter of surface as do normally shaped persons. This has been found to be the case in the subjects with apparently normal endocrine systems who have been examined in the Sage calorimeter, so that the law of surface area holds good for men of unusual body shape. However, dwarfs with involvement of the ductless glands and symptoms of cretinism showed a marked reduction in metabolism below the average found in normal cases, as has been reported by other authorities.

Age is not without influence on metabolism. Boys just before puberty have a high chemical exchange, so that their basal requirement may be as much as 25 per cent. above that of the adult. Men have a higher metabolism than women. With advancing age, however, there is no longer the same intensity of oxidation as in the prime of life. Aub and Du Bois[4] have studied in the calorimeter a group of six men between the ages of 77 and 83. Their average basal heat production was 35.1 calories per square meter per hour, which is 12 per cent. below the average for men between the ages of 20 and 50.

The most recent series of contributions in clinical calorimetry with the Sage calorimeter[5] present interesting additions to our knowledge of metabolism in disease. Edematous nephritics were found by Aub and Du Bois to manifest a diminution of the body metabolism, according both to body weight and to surface area. In two patients with great edema the heat production was 27 and 40 per cent. below the normal average. Such nephritics kept on low diets show a reduction in food requirement similar to that usually found in prolonged undernutrition. This is in contrast with the experience on patients suffering from other types of nephritis for whom the basal metabolism and the food requirement seems to be normal. Cardiorenal disease associated with dyspnea may manifest a distinct rise in the heat production.[6] It is interesting to note further that no relationship could be established between the level of metabolism and the degree of acidosis or the eliminative power of the kidney. Aub and Du Bois mention that the normal respiratory quotients found in patients with low carbon dioxid combining capacity of the blood plasma prove that nephritic acidosis is not caused by difficulty in oxidizing carbohydrates.

An illustration of the value of calorimetry in elucidating the action of drugs is afforded by the study of Means, Aub and Du Bois[7] on the behavior of caffein. They remark that as one looks over the enormous literature on the various actions of caffein, one gains the impression that the numerous contradictory statements are not necessarily due entirely to faulty obser-

1. Moulton, C. R.: Jour. Biol. Chem., 1916, **24**, 299.
2. Lusk, Graham: The Elements of the Science of Nutrition, Philadelphia, 1917.
3. Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Twenty-First Paper, The Basal Metabolism of Dwarfs and Legless Men with Observations on the Specific Dynamic Action of Protein, Arch. Int. Med., May, 1917, p. 840.
4. Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Nineteenth Paper, The Basal Metabolism of Old Men, Arch. Int. Med., May, 1917, p. 823.
5. Series of papers on clinical calorimetry in the Archives of Internal Medicine, May, 1917, Part 2.
6. Peabody, F. W.; Meyer, A. L., and Du Bois, E. F.: Arch. Int. Med., June, 1916, p. 980.
7. Means, J. H.; Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Twentieth Paper, The Effect of Caffein on the Heat Production, Arch. Int. Med., May, 1917, p. 832.

vation, but possibly because the action of caffein on any given function is extremely variable, often diametrically opposite, in different individuals, and in the same individual with varying doses. However, after taking large doses of the alkaloid (from 8 to 10 grains, or 8.6 mg. per kilogram of body weight), normal individuals exhibited an increase in the basal metabolism of from 7 to 23 per cent. without significant change in pulse rate, body temperature, or the proportions of the various foodstuffs metabolized. This unique effect of large doses of caffein seems remarkable; but, as Lusk[2] has pointed out, it is slight compared with the stimulation of metabolism by muscular exercise. It is great only by comparison with "the immutability of the level of the normal basal metabolism, a state in which the heat production is subservient to the requirement of energy on the part of the cells for the maintenance of life, the requirement being so regulated and adjusted that the heat loss per square meter of surface is approximately 40 calories per hour, while the body temperature is maintained at a constant level."

BEER AS A SOURCE OF PROTEIN

Malted liquors are defined as beverages made by the alcoholic fermentation of an infusion of barley malt and hops, with or without unmalted grains. Beer, which belongs in this category, ordinarily contains from 3.5 to 4 per cent. of alcohol. The idea long held by a large portion of the public that "alcohol increases the power of endurance, and gives greater energy and ability to work longer" has given way to a more accurate appreciation of the real rôle of this substance in the body. Despite the fact that alcohol can be burned in the human organism, the most enthusiastic supporters of its use, if there still be such, do not defend it on the basis of superior nutrient virtues. The pharmacologists almost without exception rank alcohol as a depressant rather than a stimulant in the true sense; and the therapeutist who cares to advise the employment of alcohol does so from the standpoint of its pharmacodynamic performance rather than because of any superior food value in the product.

Beer, however, has made claim to recognition as a food, in contrast with the distilled liquors that contain essentially only water and alcohol, on the basis of the cereal constituents which are still contained in it. Hence the statement that "beer is liquid bread." In addition to alcohol, beer does, in fact contain sugars and other soluble carbohydrates, along with a small amount of nitrogenous compounds that are frequently expressed as protein. The customary method of arriving at an estimate of this fraction of beer consists in determining the nitrogen content and calculating it as protein, after multiplication with the familiar factor $N \times 6.25$. This procedure is now well recognized by food analysts to be fallacious so far as it assumes that all compounds containing nitrogen, in food substances, are actually protein in nature. On this basis such substances as amins, ammonium salts, alkaloids, etc., would be counted as protein.

The uncertainty regarding the real food value, if any, of the nitrogenous compounds of beer is emphasized in a recent report of the Committee of the Royal Society on the Food Supply of the United Kingdom, which has assumed, without any conclusive evidence, that something between 50 and 100 per cent. of the nitrogen is in the form of protein or amino-acids which are utilizable in the body. In the Department of Physiology of Glasgow University, Sharpe[1] has recently undertaken to throw further light on the controverted question of the nature of the nitrogenous compounds in beer. He reviews the fate of the proteins of barley during the brewing process wherein, as a result of the malting, part of the protein in the grain is acted on by proteolytic enzymes which break it down into simpler substances. These, along with a little soluble protein, pass into solution during the mashing; but the greater part is left in the brewers' grain. During the processes of boiling, hopping and subsequent cooling of the wort, some of this protein becomes precipitated. The amount of nitrogen thus finally left in solution is termed by the brewer "permanently soluble nitrogen." By the action of the yeast during fermentation, a further quantity of soluble nitrogen is removed by these organisms' using a certain proportion as food. A further amount of protein is removed after the beer is made, and this process is carried out to insure that the beer may remain "bright."

Beers of various types contain solid matter ranging from less than 4 per cent. in the "light" varieties to over 6 per cent. in other kinds. Of this, about one half is carbohydrate, essentially dextrin in nature. This leaves 2 or 3 per cent. of the dissolved substance, some of which is nitrogenous, to be accounted for. That the protein content of the beer or ale will not be appreciable when the beverage reaches the consumer is shown by the failure of most of the protein tests to give a reaction with the product. According to Sharpe's new analyses, the protein nitrogen of the beers analyzed varies from 13.2 to 37.0 per cent. of the total nitrogen, that is, the protein content of beer varies from 0.038 to 0.185 per cent. The nitrogen as amino-acid varies from 25 to 46 per cent. of the total nitrogen, that is, the amino-acid nitrogen of beer varies from 0.014 to 0.040 per cent. There is a varying proportion of nitrogen combined as purin compounds which in some cases exceeds that combined as amino-acid nitrogen. It varies from 25.8 to 52.4 per cent. of the total nitrogen, or from 0.01 to 0.39 per cent. of the beer itself. The undetermined nitrogen of

1. Sharpe, J. S.: The Distribution of Nitrogen in Beer, Biochem. Jour., 1917, **11**, 101.

these beers varies from 2.4 to 6.3 per cent. of the total nitrogen, that is, the percentage of the beer itself varies from 0.001 to 0.005.

Bearing in mind the limited quantities of beer that can be taken per day with any approach to impunity, it will be seen that the few grams of hypothetic protein thus offered have no significance whatever as a defense for the use of the beverage. One might as well exploit the protein in ginger ale or fruit juices. A writer[2] on dietetics has thus presented the possible use of the malt liquors:

> Beer, ale, and stout, by virtue of their taste, aromatic bitters and tonics, give a relish to food, increase appetite, and promote the flow of saliva. To this extent they assist digestion. They are useful to convalescents, those enfeebled by chronic diseases, and the aged. They are of some value to those whose occupation is sedentary, whose stomach has lost tone by overwork, rush, and worry, and to sufferers from neuralgia and insomnia. The limit should be 1 pint a day. They are contraindicated in neurotic conditions, diabetes, gout, rheumatism, obesity, and genito-urinary diseases.

We leave it to our readers to steer a safe course, if there is any, between the indications and the contraindications for beer. In any event, any claim for its protein contribution to the diet no longer needs serious consideration. The dairy cattle are more fortunate in having the protein concentrate of the brewers' grains available for their ration.

Current Comment

THE INCIDENCE OF TUBERCULOSIS AMONG SOLDIERS

When Major Eduard Rist of the Medical Corps of the French Army, assigned by the French government to the Surgeon-General's Office, announced at the meeting of the American Association of Military Surgeons held at Fort Benjamin Harrison this week that the facts concerning tuberculosis in France, and especially in the French army, do not agree with the exaggerated statements published in this country, he settled conclusively a point which has agitated civilian and medical tuberculosis authorities in this country since the beginning of the war. Major Rist stated that out of 1,000 men sent back to a base hospital as suffering with pulmonary tuberculosis, all but 193 were returned to the front with the diagnosis not confirmed. He said also that the chief cause of the too numerous diagnoses of tuberculosis was the fact that civilian physicians called to army life are too much inclined to make the diagnosis of tuberculosis on very slight evidence. In making a differential diagnosis the mistakes were not made through the difficulty of differentiating pulmonary tuberculosis from unusual maladies, such as abscess of the lung, or pulmonary tumor, but far more frequently through the confusion of the diagnosis with minor complaints such as infections in the upper air passages, acute rhinitis, pharyngitis and bronchial inflammation. France, in need of every soldier, found it necessary to comb with a fine comb in order that no man be eliminated from the army through a mistaken diagnosis of this sort. The United States, with a supply of men far above the number that can be successfully trained and transported for military service, need not, perhaps, be so careful in eliminating men from military service because of the suspicion of this disease. In any event, making a diagnosis of tuberculosis and eliminating a man from military service for this cause wrongfully is not doing justice either to him or to the nation.

2. Tibbles, William: Dietetics or Food in Health and Disease, Philadelphia, 1914, p. 257.

ISOPATHY

The early stages of homeopathy are associated with certain apparently minor developments of no little interest from the historical point of view. Not wholly satisfied with the doctrine expressed by "similia similibus," Hering, Lux and others urged the principle of "aequalia aequalibus curantur" — the like cures the like. The form of treatment indicated in this slogan was regarded not as a new departure, but rather as the revival of methods found in folk medicine, and mentioned by early writers and even by church fathers, especially the holy Bishop Ivo of Chartres, whose remarkable statement on the analogy between Christ and the skilled physicians, made in 1092, runs as follows:[1]

> It is, namely, the habit of people skilled in medicine to cure at one time by opposites, and at another by likes, the illnesses which they undertake to cure. This is what our Lord Jesus Christ did, making us rich by his poverty, exalting us by his humility, healing us by his infirmity, giving us life by his death. In the same way, in medical theory, dry is set against moist, moist against dry, hot against cold: and contraries of lesser strength are overcome by the bringing in of contraries of greater strength. In similar fashion like is apposed to like, when the length or breadth of the poultice is measured by the amount of the wound or swelling. So scorpions' flesh boiled in oil heals the stings of scorpions; so a remedy made from the flesh of a serpent operates against the bite of a serpent, and, taken in a drink, overcomes poisoned drinks. In the same likeness our Physician healed by his own death in the flesh the death of our flesh which came from the serpent. . . . But with this remedy made up of the like was mixed also the remedy made of the opposite. For here obedience healed what disobedience had there corrupted; and what had there been contaminated by the pleasure of appetite is here made right again by the suffering upon the cross.

We are told[1] that the isopathic principle of treatment was carried out by its adherents in the most exact manner possible. For smallpox, matter taken from the pustules — "variolin" — was given internally; itch was treated internally with "psorin" or scaly material from parts affected with scabies; sweating of the feet with foot-sweat; phthisis with "phthisin"; caries of the teeth with "odontonekrosin"; diseases of the liver with "hepatin"; diseases of the spleen with "lienin"; diarrhea with fecal matter; teniasis with tapeworm joints; gonorrhea with gonorrheal pus — a treatment for gonorrhea recently urged again as a new advance by a homeopathic physician in New York. In the end it even was demanded that the remedy must come from the patient's own body —

1. Quoted by Faye, Nord med. Ark., 1880, **20**.

auto-isopathy — and autocankrin was given in cancer, auto-odontonekrosin for dental fistula, etc. The reference in the remarkable statement by Bishop Ivo to the use of the flesh of scorpions and serpents in stings and bites by these animals reminds us again that in the early ways of treating the conditions resulting from the bites of poisonous animals we see the first foreshadowings of the present conceptions of immunity and the treatment based thereon. Probably what is usually called crude empiricism has had more to do with the evolution of those conceptions and methods of treatment, preventive and curative, than ordinarily recognized.

"SCIENCE"

". . . the only difference between the hypochondriac and the consumptive is, that the one suffers from what the world would term a purely mental disease, imagining himself unwell, whilst the other has, unconsciously, thought himself into a condition of one of the many phases of disease."

So, editorially, speaks the *Christian Science Monitor* of recent date. This also, we opine, is the only difference between the soldier suffering from "shell shock" and the one who has had a leg blown off. For the Christian Scientist, germs do not exist; the tubercle bacillus is but a creature of the medical man's disordered fancy. The unreality of a germ as distinguished from the materiality, let us say, of the two dollar bill which a Christian Science practitioner exacts for an "absent treatment" is based, presumably, on the fact that one can be seen only through a microscope while the other is visible to the naked eye.

MILK PRODUCTION

At a time when much interest centers in the preservation of our dairy cattle from the temptation of disposing of them profitably as sources of beef, it is important to count the cost which the rearing of milch cows to their highest productivity really entails. According to reports of German experience, since the war began about 10 per cent. of the dairy cattle have been slaughtered each year. At best there are probably not more than 20,000,000 productive dairy animals in this country at present. Next in importance to the integrity of the bread ration in the household is the maintenance of the normal milk supply, as already pointed out in THE JOURNAL.[1] The number of milch cows is only one measurement of milk production; the productivity of the individual cow is the other. At the present time the average milch cow supplies 4.5 individuals in this country. Pearl and Patterson[2] have pointed out the fact well known among dairymen and breeders that, other conditions being the same, a cow will produce more in a given length of time during her second lactation period than for the same time during her first period; she will produce more her third lactation period than her second, and so on until she reaches mature form, or the age for maximum production. She remains in this mature form for a few years; then each succeeding lactation period decreases in the rate of milk flow. Opinions differ somewhat as to the average age at which a cow reaches mature form, and as to the rate of increase with which she approaches that form. The general belief is that mature form is reached by the fifth year. An investigation of the records of American Jersey cattle—a typical milk-producing breed—has verified the fact that milk production changes with age in a definite manner. Maximum production is reached at approximately the age of 8 years and 7 months. The long time, measured in years, required to procure the highest efficiency should serve as an added warning against permitting the unwise slaughter of such slowly developing potentialities. For, after all, beef is not the sole wholesome food available.

1. The Effect of War on Dietary Prejudices, editorial, THE JOURNAL A. M. A., June 23, 1917, p. 1912; Another Word About Milk, July 28, 1917, p. 289.
2. Pearl, R., and Patterson, S. W.: The Change of Milk Flow with Age, as Determined from Seven Day Records of Jersey Cows, Bull. 253, Maine Agr. Expt. Station, July, 1917.

DRINKING FOUNTAINS—SANITARY AND INSANITARY

Last year we referred to the unexpected menace to health which the modern type of so-called sanitary drinking fountain may harbor.[1] That this is not merely an academic assumption, but may become a dangerous actuality, was borne out by the occurrence of a streptococcal infection that was traced directly to a drinking fountain.[2] Although nozzle fountains are being installed in large numbers throughout the country, there is little evidence, if one may judge from the forms everywhere displayed, that the defects of the types now furnished are either corrected or recognized. In the earlier investigations it was pointed out that the vertical jet of water permits micro-organisms derived from the mouth of the drinker to dance in the stream like a ball in the jet of a fountain, so that the bacteria may remain undisplaced for unexpectedly long periods. Dr. Whittaker[3] of the Minnesota State Board of Health has since completed an investigation of seventy-seven drinking fountains representing fifteen commercially obtainable types. About two thirds of these were of the continuous-flow type and one third of the intermittent type operated by the consumer. The nozzles on all discharged vertically, and the height of the water jet above the parts that could be touched by the lips of the drinker was less than one inch in nearly half of the fountains. All were subject to contamination by the consumer, either directly by the lips or by water falling back from the lips on the jet or surrounding parts. Certain of the types have closed cup-shaped receptacles around the point of discharge which were demonstrated to retain added coloring mater — and therefore bacteria also — for long periods of time. The crucial test of danger comes in the bacteriologic examinations conducted on these fountains. Eighty per cent. of those in use at the University of Minnesota were found infected with streptococci; and the water from 11 per cent. con-

1. Possible Dangers of the Bubble Fountain, editorial THE JOURNAL A. M. A., Nov. 11, 1916, p. 1451.
2. Pettibone, D. F.; Bogart, F. P., and Clark, P. F.: Jour. Bacteriol., 1916, **1**, 471.
3. Whittaker, H. A.: Drinking Fountains: Investigation of Fountains at the University of Minnesota, Pub. Health Rep., May 11, 1917, p. 691.

tained organisms of this type when they were not found present in the water supplied to the fountains. As Whittaker says, these results indicate clearly that drinking fountains may be a factor in the transmission of communicable diseases. There is nothing discouraging about this, however; for it has already been demonstrated that the existing conditions can be remedied by the introduction of fountain nozzles that are safe from a sanitary standpoint and are economical to construct and operate. The change of construction merely involves the substitution of an inclined nozzle for the vertical jet, and the protection of the point of discharge from the approach of the consumer.

THE MEDICAL EXAMINATION OF THE NATIONAL ARMY

The announcement has just been made from Provost-Marshal General Crowder's office in Washington that in examining the remainder of the 10,000,000 men subject to draft and service in the National Army, information will be sought first as to the liability of each man for service, and the physical examination will follow only when the man is not exempt for some cause under the law. This is so obviously the correct order of the steps in the selection of men for service that it is surprising that this method was not adopted in the calling of the first 700,000 men.

THE IMPORTANCE OF MOUTH SPRAY INFECTION

Under conditions that involve the close association of large numbers of persons, as in the great military encampments, certain modes of infection acquire a kind of exaggerated importance. The transmission of disease germs in ways that are rare in normal everyday life occurs with greater frequency and has more far-reaching consequences. Exposure to inhalation of mouth spray is one of the most serious dangers. The small droplets discharged from the mouth or nose in sneezing, coughing, laughing and loud talking float about in the air for some time, and may be carried by currents of air to a considerable distance. There is reason to believe from the experiments of Köhlisch with tubercle bacilli that the moist droplets which often contain a little mucus are more likely than dry dust to produce infection. Köhlisch, for instance, found in animal experiments that fifty tubercle bacilli inhaled as bacterial spray produced over twenty lung nodules, while the inhalation of over 2,000 in the form of dry dust had a very irregular action, and in some cases evoked no pathologic change. It is a somewhat general belief that, in human tuberculosis, infectious droplets are a more frequent source of infection than dried sputum. In numerous other infections that enter by way of the respiratory tract, the inhalation of mouth spray coming from an infected person or healthy carrier seems the typical mode of infection. This is true in diseases like pneumonia, influenza and whooping-cough, and probably in measles. Epidemic meningitis is probably also most commonly spread in this way. The importance of mouth spray in surgical wound infection is well known. In camp life, infection of this sort is notably difficult to control. The rapidity with which measles and epidemic meningitis are likely to spread among new recruits is typical. Possibly increase of tuberculosis among troops is partly due to the increased opportunity for infection as well as to the influence of predisposing factors. It is doubtful whether hygienic instruction in the use of the handkerchief for smothering mouth spray from the particularly mischievous sneezes and coughs would be immediately effective, although every hygienically trained individual is a help toward the desired end. General camp measures that promote resistance to infection are always of value, probably especially so in meningitis, less of course in measles. If it were possible in cases of "cold" and the like in the incipient stage to make examinations, and when necessary, to isolate the patients, the spread of mouth spray infection might be materially checked. This measure is worthy of consideration in all conditions in which there is any definite and serious respiratory tract epidemic. Known contacts may be kept under special surveillance and the cooperation of officers enlisted to detect early signs of infection. There is no single and universally applicable method for preventing the transference of germs from one soldier's respiratory tract to another's, but all reasonable and persistent attempts to prevent mouth spray infection are worth making. A person with the developed rash of measles or the skin-peeling of scarlet fever is not allowed to roam unchecked, if his condition is known; but little or no restraint is yet put either by health authorities or by public opinion on the wanderings of the much more dangerous person who is sneezing and coughing myriads of germs into the atmosphere.

THE BELGIAN AND FRENCH PHYSICIANS' FUND

We recently attempted to emphasize the appeal for funds for physicians of Belgium and Northern France who need aid in various ways. Dr. Keen acknowledges in this issue of THE JOURNAL the contributions to this fund thus far received. There are only sixteen contributors in this first list; there ought to be sixteen hundred, and there would be—and many more than this number—if the actual conditions among our professional brothers on the other side were realized.

War Dietary and Scurvy.—The death of a patient from scurvy in the Poor Laws hospital in Glasgow prompted the investigation of the occurrence of scurvy. This was deemed important in view of the enforced changes in diet of many people on account of war conditions. The investigations disclosed that under normal conditions three or four patients with scurvy are admitted to each of the Poor Laws hospitals each year. Since the middle of February, 1917, however, according to an article in the *Medical Officer* (London), fifty patients with scurvy have been admitted. It is said that all of these cases occurred in males, and appeared to occur only in men who live in model lodging houses or who live alone. This it is said suggests improper selection and preparation of food. The superintendent of one of the hospitals believes that the shortage of potatoes has much to do in the occurrence of scurvy, this being the only fresh vegetable customarily used by this class of patients.

Medical Mobilization and the War

PHYSICIANS RECOMMENDED FOR COMMISSION IN RESERVE CORPS

During the week ending Sept. 29, 1917, 522 physicians were recommended for commission in the Medical Reserve Corps, the proportion being six majors, seventy captains and 446 lieutenants.

During the week ending Oct. 6, 1917, 252 physicians were recommended to the Adjutant-General of the Army for commission in the Medical Reserve Corps, the proportion being one major, twenty-seven captains and 224 lieutenants.

NEWS OF THE CANTONMENTS

[From Our Special Correspondents]

Camp Pike, Ark.

Camp Pike, the location of the Eighty-Seventh Division of the National Army, is situated in the hills about 5 miles north of Little Rock. The camp itself occupies a fairly level spot cleared from a forest of small oak. The surrounding scenery is very beautiful. The camp is largely completed as far as buildings are concerned, but the roads and the walks for foot passengers have yet, to a great extent, to be finished. An area about 2 miles long by 1 mile wide would contain the main portion of the camp.

The great army of drafted men are coming in, a few hundred daily, and the physical examination is being done in thirteen regimental infirmaries. So far about 18,000 men have been examined. The last increment consisted of 1,600 colored men, who were handled entirely by Regimental Infirmaries 1 and 2, depot troops. The commissioned medical personnel doing this examining was largely taken from the training school at Fort Riley, Kan. About thirty-five medical officers of the Reserve Corps have handled this 18,000 and have entered on their duties with energy and dispatch. All men requiring further examination have been sent to a board of specialists especially designated for that service at the base hospital.

THE BASE HOSPITAL

The 1,000 bed base hospital at this point under the command of Major A. P. Upshur, M. C., is a group of one story buildings, the floor space of which covers over 20 acres. It takes an hour of casual inspection to walk through it. The health of the command at present is good, and the hospital had only a little over 100 admissions during the past week. There has been some measles in the command, but nothing of a serious nature. While Camp Pike has had a rather high malarial rate in the past, every effort is being made to prevent the breeding of mosquitoes in this locality, and the work is being pushed by Major Charles E. Freeman, M. C., who is sanitary inspector for this division. Camp Pike is very well drained, and the water supply is excellent.

Under the leadership and direction of Lieut.-Col. Robert M. Thornburgh, the medical work of the division is rapidly assuming the proportions of a well oiled and well operated machine. Major Russel R. Jones, M. R. C., recently ordered here from Fort Oglethorpe, where he has been since June 1 as an instructor in the M. O. T. C., arrived a few days ago and assumed his duties as assistant to the division surgeon.

PROBLEMS OF THE DIVISION SURGEON

The problems confronting the division surgeon in the opening and establishing of his office are multitudinous, multifarious and never ceasing. Men of every station and grade, from the millionaire to the pauper and from the highly intellectual to the moron, come trooping daily down the streets of Camp Pike to meet their fate at the hands of the hard working crew of medical officers, who a few months before were leading the independent life of the civilian physician. To select the true from the false, the mentally weak from the mentally strong, the crippled from the well, the sightless from the seeing, and to do no injustice to any one has certainly taxed the mental and physical energies of the examiners to the utmost. There is a general impression that at least here there were few exemptions. The lame, the halt and the blind have come here to have it decided whether of such material could be made the "little buck private" of the U. S. Army. Men have come into Camp Pike, led by hand, with wooden legs, in the advanced stages of pulmonary tuberculosis, feebleminded and insane, and with every imaginable condition and physical deformity of the most pronounced character. Paralytics and epileptics are not uncommon. There are a great many things about these men that arouse one's sympathies. Occasionally one comes in bringing his whole family and part of his wife's relations along.

THE SANITARY TRAIN

The Sanitary Train of the Eighty-Seventh Division has received about half its enlisted quota. Lieut. R. H. Davies of Fort Riley, Kan., and Chicago is in charge of Provisional Field Hospital No. 1, and Lieut. J. B. Steele of Fort Riley, Kan., and Chattanooga, Tenn., is in charge of Provisional Ambulance Company No. 1. Lieutenants Davies and Steele are unofficially directing the field hospital and ambulance work, respectively. Recent additions to the sanitary train are Red Cross Ambulance Company 44 of Topeka, Kan., with five officers and 118 men, in charge of Lieutenant Lerrigo, and Red Cross Ambulance Company 39 of Mississippi, with thirty men and no other officers, in charge of Capt. Nolan Stewart. Provisional Field Hospital No. 1 has its full equipment, and there is now complete equipment here for two ambulance companies. The sanitary train is to be completed as regards personnel at an early date.

The regimental infirmaries of the Eighty-Seventh Division are all fully equipped and are handling their work in a thorough and efficient manner.

A recent promotion was that of Capt. Amos Gale Straw of the roentgen-ray department at the base hospital to the grade of Major.

Camp Wheeler

106TH SANITARY TRAIN, 31ST DIVISION

The train now consists of Field Hospitals Nos. 121 (Florida), 124 (Alabama), and 122 and 123 formed from equal division of Georgia Field Hospital No. 1. Numbers 121 and 123 are designated as motor companies and 122 and 124 as animal drawn. Major George L. Keenan, M. C., N. G. (Mass.), commands the section.

Ambulance Company No. 1 of Alabama has been divided into four equal parts, each the nucleus of Ambulance Companies Nos. 121, 122, 123, 124, two motor and two animal drawn; Major Job Patterson, M. C., N. G. (Ga.), commands the section.

Many of the officers' families have arrived and taken permanent quarters in Macon, and are interesting themselves actively in Red Cross affairs.

The members of the orchestra of the Florida Field Hospital (No. 121) are the recipients of much favorable comment on their work. They merit it.

Last week a pleasant social was held, introducing the ladies of the train. Supper was served in one of the large mess halls after which the Florida Hospital orchestra played for dancing until 10:30. It is the intention of the train to make these socials a weekly affair on Wednesday evenings. The guest of the evening was Lieut.-Col. Louis C. Duncan, M. C., U. S. Army, division surgeon.

The camp hospital has now assumed large proportions and its conduct and management under Major Lorne A. Greene, M. C., N. G. (No. 12) is the wonder of visiting officers, Red Cross officials and civilians. The aid of the Red Cross of Macon has been of invaluable assistance, and their donations of pillows, sheets and delicacies have certainly been appreciated by the patients. The hospital cares for about 250 patients.

The urgent need of men to complete the train complement is strongly felt. One hundred men are needed in the field hospital section and 300 in the ambulance section. Yet, withal, our camp is unequaled in the division.

Great interest is evinced by officers and men in the first-aid dugouts to be built in connection with the trench system now being constructed by the division engineer.

The officers of the mounted organization of the sanitary train ride into the country each Wednesday afternoon studying roads, topography, mapping, etc. Problems will be taken up in November.

The Red Cross Association is spending several thousand dollars in clearing up the area about the camp. Surgeon Williams of the P. H. S. directs under the persuasion of Colonel Duncan. The Chamber of Commerce of the city of Macon appropriated $4,000 to help clean up the city.

The base hospital, Major R. W. Bliss, M. C., U. S. Army, commanding, will soon be ready to open, with 500 beds.

BASE HOSPITAL NOTES

The base hospital at Camp Wheeler is still under construction; no buildings are as yet completed. Our staff is all here and officers and men are having daily instruction.

At present all cases are sent to the field hospital. There are fifteen wards, each having on an average of twenty-five beds. It has been said that this is the largest field hospital in the history of the United States Army. This condition is accounted for by the fact that the base hospital is doing all its work there and at present several members of the base hospital staff are connected with the field hospital.

Lieutenant Horne was operated on for appendicitis by Major Cole about two weeks ago and is now sitting up and doing finely.

Lieutenants Upchurch and Miller, genito-urinary men from the base hospital, are doing the genito-urinary work at field hospital for the entire camp. They say they have not much time to gossip.

The officers quarters at the base hospital are practically completed and will be occupied the early part of this week.

Camp McClellan, Anniston, Ala.

The medical history of Camp McClellan dates from Aug. 18, 1917, when the First Virginia Field Hospital, in command of Major J. C. Bowman, arrived at camp. Being the first troops of the Twenty-Ninth Division to arrive in camp, the camp hospital was established by that organization, and it successfully cared for all the sick of the division until September 28, when the base hospital opened its doors.

PERSONNEL

The following assignments for the division have been made: Lieut.-Col. C. R. Snyder, M. C., U. S. Army, division surgeon; Major Junius F. Lynch, M. C., Va. N. G., former chief surgeon of Virginia National Guard, assistant division surgeon; Major J. H. Ulrich, M. C., Md. N. G., Baltimore, division sanitary inspector; Major James S. Fox, M. C., U. S. Army, commanding officer, base hospital; Major Valentine Ruch, M. C., N. G. N. J., former assistant chief surgeon, New Jersey National Guard, director, ambulance companies; Major L. H. Reichelderfer, M. C., D. C. N. G., former chief surgeon, District of Columbia National Guard, director, field hospitals.

The sanitary train of this division has been designated as the 104th sanitary train.

EXEMPTION OF MEDICAL STUDENTS AND INTERNS

Advice to Medical Students

Paragraph 1, Section Z of compiled rulings of Provost Marshal-General Number 11, dated Sept. 4, 1917, reads as follows:

Hospital interns who are graduates of well recognized medical schools or medical students in their fourth, third or second year in any well recognized medical school, who have *not* been called by a local board for physical examination may enlist in the Enlisted Reserve Corps provided for by Section 55 of the National Defense Act under regulations to be issued by the Surgeon-General and if they are thereafter called by a local board, they may be discharged on proper claim presented on the ground that they are in the military service of the United States.

MEDICAL STUDENTS AND INTERNS NOT YET DRAFTED

In accordance with the above, the Surgeon-General has provided special regulations applicable to hospital interns and medical students. These may be summarized as follows:

"(*a*) Medical students and interns who have *not* been drafted may enlist in the Medical Enlisted Reserve Corps and thus be released from subsequent draft.

"(*b*) Interns who have served one year or more will not be enlisted in the Medical Enlisted Reserve Corps.

"(*c*) Any intern who is enlisted in the Medical Enlisted Reserve Corps may be called into service if needed at the end of one year of internship.

"(*d*) A medical student enlisted in the Medical Enlisted Reserve Corps may be called into active service under his enlistment if his services are needed or on failing to pass one class to another or on failing to graduate.

"(*e*) An internship of more than one year will not be recognized.

"(*f*) Hospitals, sanitariums and other institutions running for private gain will not be recognized in the consideration of interns.

"(*g*) The dean of the medical faculty must report twice a year on the status and progress of students in his school enlisted in the Medical Enlisted Reserve Corps."

Medical students and interns who have been accepted for the draft have already been given the opportunity of taking advantage of these special regulations and with these the advice offered at present has nothing to do. The question now under consideration is, What should medical students (who have *not* been called by a local board) and interns (who have not served one year or more) do in regard to enlisting in the Medical Enlisted Reserve Corps? This procedure is opened to them and we strongly advise that every medical student in a well recognized medical school and every intern who is a graduate of a well recognized medical school and who has served less than one year as an intern, should make application to the Surgeon-General for enlistment in the Medical Enlisted Reserve Corps.

ANNOUNCEMENT OF STAFF OFFICERS

National Guard Division

The following is a list of the medical staff officers in the various National Guard divisions:

26th Division.—Lieut-Col. James L. Bevans, surgeon; Major John G. Towne, assistant surgeon.

27th Division.—Camp Wadsworth, Spartanburg, S. C.: Lieut.-Col. Edward R. Maloney, surgeon; Lieut.-Col. Walter C. Montgomery, sanitary inspector; Major Lefferts Hutton, assistant surgeon.

28th Division.—Camp Hancock, Wheless, Ga.: Lieut.-Col. William J. Crookston, surgeon; Major C. A. Dillinger, assistant surgeon; Major William E. Kellar, sanitary inspector.

29th Division.—Camp McClellan, Anniston, Ala.: Lieut.-Col. Craig R. Snyder, surgeon; Major Junius F. Lynch, assistant surgeon; Major J. H. Ullrich, sanitary inspector.

30th Division.—Camp Sevier, Greenville, S. C.: Lieut.-Col. Arthur M. Whaley, surgeon; Major Alexander M. Brails, assistant surgeon; Major Naniwell, sanitary inspector.

31st Division.—Camp Wheeler, Macon, Ga.: Lieut.-Col. Louis C. Duncan, surgeon; Major William A. Padgett, assistant surgeon; Major Raymond C. Turck, sanitary inspector.

32d Division.—Camp MacArthur, Waco, Texas: Lieut.-Col. Perry L. Boyer, surgeon; Capt. Randall N. Cooley, assistant surgeon; Major Gilbert E. Seaman, sanitary inspector.

33d Division.—Camp Logan, Houston, Texas: Lieut.-Col. Levy M. Hathaway, surgeon; Major Gustavus M. Blech, assistant surgeon.

34th Division.—Camp Cody, Deming, N. M.: Lieut.-Col. Jacob L. Coffin, surgeon; Capt. L. B. Sturdevant, assistant surgeon; Major James E. Merrill, sanitary inspector.

35th Division.—Camp Doniphan, Fort Sill, Okla.: Lieut.-Col. William Davidson, surgeon.

36th Division.—Camp Bowie, Fort Worth, Texas: Lieut.-Col. Raymond F. Metcalfe, surgeon; Major John J. O'Reilly, assistant surgeon; Major Floyd J. Boland, sanitary inspector.

37th Division.—Camp Sheridan, Montgomery, Ala.: Lieut.-Col. Joseph A. Hall, surgeon; Major John C. Darby, assistant surgeon; Major Charles A. Neal, sanitary inspector.

38th Division.—Camp Shelby, Hattiesburg, Miss.: Lieut.-Col. Robert M. Blanchard, surgeon; Capt. A. C. L. Percefull, assistant surgeon; L. D. Carter, sanitary inspector.

39th Division.—Camp Beauregard, Alexandria, La.: Lieut.-Col. William N. Sinart, surgeon; Major John W. D. Dicks, assistant surgeon; Lieut.-Col. W. S. Schauffler, sanitary inspector.

40th Division.—Camp Kearny, San Diego, Calif.: Lieut.-Col. Alexander Murray, surgeon; Major William A. Jelley, assistant surgeon; Major Charles W. Decker, sanitary inspector.

41st Division.—Camp Fremont, Charlotte, N. C.: Lieut.-Col. Orville G. Brown, surgeon; Major F. M. Carroll, assistant surgeon.

National Army Divisions

The following are staff officers of the National Army divisions:

76th Division.—Camp Devens, Ayer, Mass.: Lieut.-Col. Llewelyn P. Williamson, surgeon; Major Joseph L. Sifler, assistant surgeon.

77th Division.—Camp Upton, Yaphank, L. I.: Lieut.-Col. Charles R. Reynolds, surgeon; Major Alvin Schoenleber, assistant surgeon.

78th Division.—Camp Dix, Wrightstown, N. J.: Lieut.-Col. George M. Ekwurzel, surgeon; Lieut.-Col. John W. Hanner, assistant surgeon.

79th Division.—Camp Meade, Admiral, Md.: Lieut.-Col. Philip W. Huntington, surgeon; Major Guy L. Qualls, assistant surgeon.

80th Division.—Camp Lee, Petersburg, Va.: Lieut.-Col. Charles E. Marrow, surgeon; Major Henry P. Carter, assistant surgeon.

81st Division.—Camp Jackson, Columbia, S. C.: Lieut.-Col. Kent Nelson, surgeon; Major Thomas J. Leary, assistant surgeon.

82d Division.—Camp Gordon, Atlanta, Ga.: Lieut.-Col. Conrad E. Koerper, surgeon; Major William T. Cade, assistant surgeon.

83d Division.—Camp Sherman, Chillicothe, Ohio: Lieut.-Col. Wallace DeWitt, surgeon; Lieut.-Col. Samuel J. Morris, assistant surgeon.

84th Division.—Camp Taylor, Dumesnil, Ky.: Lieut.-Col. John H. Allen, surgeon; Major Luther R. Poust, assistant surgeon.

85th Division.—Camp Custer, Battle Creek, Mich.: Lieut.-Col. Cosam J. Bartlett, surgeon; Lieut.-Col. William A. Powell, assistant surgeon.

86th Division.—Camp Grant, Rockford, Ill.: Lieut.-Col. James M. Phalen, surgeon; Lieut.-Col. Howard H. Bailey, assistant surgeon.

87th Division.—Camp Pike, Little Rock, Ark.: Lieut.-Col. Robert M. Thornburgh, surgeon; Major Charles E. Freeman, assistant surgeon.

88th Division.—Camp Dodge, Des Moines, Iowa: Lieut.-Col. Jay R. Shook, surgeon; Major Clarence E. Fronk, assistant surgeon.

89th Division.—Camp Funston, Fort Riley, Kan.: Lieut.-Col. John L. Shepard, surgeon; Lieut.-Col. Frank W. Weed, assistant surgeon.

90th Division.—Camp Travis, San Antonio, Texas: Lieut.-Col. Paul S. Halloran, surgeon; Lieut.-Col. Robert H. Pierson, assistant surgeon.

91st Division.—Camp Lewis, American Lake, Wash.: Lieut.-Col. Peter C. Field, surgeon; Lieut.-Col. Lloyd L. Smith, assistant surgeon.

PROTECTION AGAINST VENEREAL DISEASES

On September 29, Senator Weeks reported a bill from the Committee on Military Affairs for the protection of military and naval forces, the aim being to guard these forces from physical and moral injuries of commercialized prostitution. It was read the first time by its title and the second time at length, as follows:

Be it enacted, etc., That it shall be unlawful to keep or assist in keeping a place of prostitution to which any person known to be a member of the military or naval forces of the United States is admitted or to admit any such member to such place, or to knowingly rent or in any manner allow the use of any place for acts of prostitution with any member of such military or naval forces. No person shall solicit or seek to induce any person known to be a member of such military or naval forces to enter any place of prostitution or to consort or cohabit with any prostitute. Knowledge that a person is a member of the military or naval forces of the United States may be prima facie established by proof showing that the accused had knowledge that at the time or recently before the commission of the offense the person alleged to be a member of such military or naval forces was wearing the uniform of such military or naval forces. Whoever shall violate any of the provisions of this section shall be guilty of a misdemeanor and shall be punished by a fine of not more than $1,000 or imprisonment not more than one year, or by both such fine and imprisonment.

Sec. 2. That it shall be unlawful for any person who has been convicted of disorderly conduct, delinquency, soliciting for prostitution, or any other sexual offense, without having first obtained permission from the proper military authorities, to loiter in or around a military camp, fort, navy yard, or place of training or mobilization. Any such person present in or around such camp, fort, navy yard, or place of training or mobilization, without authorization or military permission, may be ordered to depart by the civil or military authorities having jurisdiction therein. Any person failing to depart when so requested shall be guilty of disorderly conduct and shall be punished by a fine of not more than $100 or imprisonment of not more than 60 days, or by both such fine and imprisonment.

The bill was considered as in committee of the whole, reported to the Senate, one amendment ordered to be engrossed for the third reading, read the third time, and passed by the Senate.

INSTRUCTORS OF MEDICAL OFFICERS' TRAINING CAMP CONFER

On Oct. 8, 1917, instructors in the Medical Officers' Training Camps, including Col. Henry Page, Fort Oglethorpe, Ga.; Lieut.-Col. Percy M. Ashburn, Fort Benjamin Harrison, Ind.; Lieut.-Col. William N. Bispham, Fort Riley, Kan., and Major Ernest G. Bingham, Fort Des Moines, Iowa, met at Fort Benjamin Harrison in connection with the meeting of the American Association of Military Surgeons for a conference relative to the standardization of the course of instruction in the Medical Officers' Training Camps.

TAKING CARE OF SOLDIERS' FAMILIES

The *Survey* for September 29 reviews legislation enacted in various states providing allowances for the dependents of soldiers and sailors during the war. Connecticut, Maine, Massachusetts, Michigan, New Hampshire, Vermont and Wisconsin have enacted such legislation, and Colorado, Iowa, Kansas, Minnesota, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania and Rhode Island have taken some sort of state-wide action for the same purpose. The legislation enacted in the states named is compared with the proposed Alexander-Simmons bill now pending in Congress, and points of incompatibility with the proposed national law are pointed out. In some of these states, the schedule of allowances approaches nearly that of the proposed national law, but in others, it is much less. In some of the states, these local laws will be rendered inoperative after the national law is passed. Other states which have not enacted laws providing for the care of dependents have made provisions for increased appropriations to existing institutions for the care of soldiers and sailors, as in the case of Colorado, which made an additional appropriation in 1917 for the Soldiers' and Sailors' Home. In Oklahoma, the State Department of Charities and Corrections has notified the National Defense Committee that the state will, through its hospitals, care for soldiers who may become mentally unbalanced, and is preparing to establish an institution for the care of veterans of the Civil and Spanish-American wars, as well as for those who serve in the present European war and their widows. It will thus be seen that a proper general interest is being taken by the states in the care of those who might otherwise suffer privation from the war.

NEW MEDICAL SERVICE BUREAU FOR RED CROSS

As announced by the Red Cross War Council, the growth of the work of the Red Cross Commissions in European countries during the past two months has made necessary the establishment of a Bureau of Medical Service of Foreign Commissions, to give prompt and expert attention to requests for medical and surgical supplies. This bureau will aid the commissions now at work in France, Russia, Roumania, Italy and Serbia. Requests for additional physicians and nurses, particularly in France and Roumania, for service with these commissions will also be handled by the new bureau. The physicians on this bureau are Drs. R. M. Pearce, Philadelphia, professor of research medicine, University of Pennsylvania, who will be the director; W. C. Bailey, Boston, associate director; Ralph Pemberton, Philadelphia, assistant, and John Gilbert, Philadelphia, secretary. The bureau is furnishing bacteriologists, chemists, surgeons and others for the Red Cross establishments in Paris. Drugs and medical supplies to the amount of more than $500,000 have been shipped to Russia, and three detachments of pediatrists have been recruited for service with the new children's bureau of the Red Cross in France.

WOMEN'S HOSPITAL UNIT ACCEPTED

The mobile hospital unit which the New York Infirmary for Women and Children has prepared has been accepted by the French government, through the High French Commissioner Tardieu. The unit is composed of a hospital with 100 beds and small flying auxiliary units. Its purpose primarily is to work among French women and children who have suffered from a lack of medical attendance, but it will also accept calls for the care of wounded soldiers. Dr. Caroline S. Finley is director of the unit, and expects to leave for France early in October to make arrangements for the reception of the unit. Preparations here are in charge of Dr. Anna I. Von Sholly and an executive committee, composed of Drs. Mary Lee Edward and Alice Gregory. The expedition is backed by the National Woman Suffrage Association.

AMERICAN ASSOCIATION OF MILITARY SURGEONS

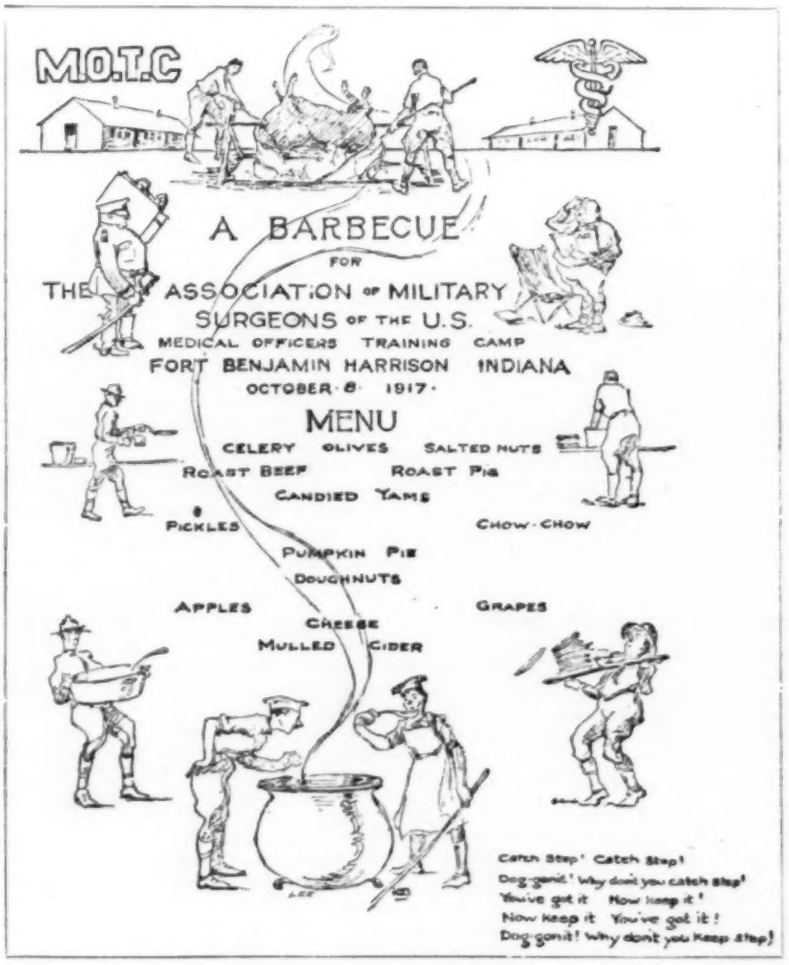
Meeting at Fort Benjamin Harrison

The 1917 meeting of the Association of Military Surgeons began Sunday afternoon, October 7, at Fort Benjamin Harrison. With the onset of the war, a revival of interest in the association has occurred and it now numbers 4,000 members and has a substantial balance in its treasury. In addition to the men attending the meeting of the association, there were among the audience the 1,200 physicians who are taking the training course at Fort Benjamin Harrison and such enlisted men as were not engaged elsewhere.

A VISIT TO THE POST

On Sunday afternoon, the guests were invited to inspect the fort. There were included Captain Lung, medical director, U. S. Navy; Col. Charles Dircle and Major Edward Rist of the French Medical Corps; Col. T. H. Goodwin and Capt. J. Gilmour, R. A. M. C.; Cols. W. A. J. Shockley, E. L. Munson, W. N. Bispham and Henry Page, M. C., U. S. Army; Surg.-Gen. Rupert Blue and Asst. Surg.-Gen. W. C. Rucker, U. S. P. H. S., and Majors V. C. Vaughan and Joseph C. Bloodgood, M. R. C., U. S. Army. The first point visited was the sewage destruction pits designed by Col. Percy M. Ashburn, commandant, M. O. T. C., Fort Benjamin Harrison. Pits 6 feet deep are dug and the refuse poured in from iron cans, then covered with oil and allowed to digest itself.

The inspection of the field ambulances brought forth the interesting comment from the British officers that all of the British ambulances were now heated, utilizing the exhaust from the engine. None of the American ambulances were constructed with this provision.



Menu of the barbecue.

EVENING SESSION

In the evening, the guests were assembled at the open-air speaking stand, which was surrounded with huge bonfires. Colonel Ashburn introduced Colonel Goodwin and Major Rist, who addressed the audience, felicitating the medical officers on the fact that France, England and America were now united as brothers in a common cause. A vaudeville program was provided by the medical officers in the training camp and the enlisted men, especially noteworthy being the singing of Paul U. Davies, professor of music in the Metropolitan School of Music, now an officer in the Ambulance Corps, and recitations by Capt. Daniel Hoyt, Philadelphia, of Company No. 2.

MONDAY MORNING

The Monday morning session was opened with the address of the president, Surg.-Gen. Rupert Blue, who called attention to the excellent status of the association and the great things promised for the future. Major Eduard Rist spoke on "Tuberculosis in the French Army." He said that the figures as to the prevalence of this disease have been greatly exaggerated. Out of 1,000 soldiers sent back to base hospitals with the diagnosis of pulmonary tuberculosis, all except 193 were returned to the front because the diagnosis could not be substantiated.

Reports were then received from the various officers of the association, and committees were appointed.

ADDRESS BY MAJOR VAUGHAN

The morning session was closed with a patriotic address by Major Victor C. Vaughan, which was most enthusiastically received. The men cheered until the speaker was forced to rise and bow his acknowledgment. Major Vaughan told of his experiences in the Spanish-American War when he entered as a reserve officer and made himself subject to court martial the first day by a kindly letter of protest to the colonel. He followed with a special address to men of German parentage or German sympathies in which he stated that he was convinced that all Germans were not in sympathy with the militaristic policy of the government. When in Berlin in 1907, Major Vaughan met Wassermann, the noted serologist. Late in the afternoon, Wassermann and Major Vaughan, leaving the Institute for Infectious Diseases, walked toward the city. They passed a barracks in which 50,000 soldiers were quartered on Berlin and at that time a hope was expressed that some day the flag of a republican Germany would fly over the buildings devoted, not to militarism, but to some scientific or peaceful purpose. Major Vaughan eulogized the student officers for volunteering without a draft and coming forth so nobly to do their duty. He told them that after the war they might not find their practices conserved, but they would more likely find that during their absence their competitors had fattened on their practice. They might be compelled to reestablish themselves in some side street, while their competitors held forth on the avenue, but they would be proud in their realization that they had served their country, whereas the competitor would find himself much abashed when his son asked him what he had done in the great war.

AFTERNOON SESSION

Most of the visitors took lunch at the mess of the student officers. The afternoon session opened with an address by Surgeon-General Braisted, M. C., U. S. Navy. General Braisted said that the Navy has obtained practically all the medical men needed for its service. Twenty-seven naval base hospitals have been constituted and five are already abroad on active duty. Following the address of Surgeon-General Braisted was a symposium by Col. Louis A. LaGarde, M. C., U. S. Army (retired); P. A. Surg. H. B. Eaton, U. S. Navy, whose paper was read by Fleet Surgeon McCulloch and Assistant Surgeon-General Rucker of the U. S. P. H. S., on "The Way in Which the Medical Military Service of the Government May Best Cooperate in Time of War." P. A. Sur-

geon Eaton was disappointed that the draft should have concerned only the Army without realization of the needs of the Navy, and stated that a true democracy would have drafted equally for the Navy as for the Army. Dr. Rucker expressed the hope that some day we might have a U. S. Medical Department in which all of the service could be united in one department working together under a common head. Major Joseph C. Bloodgood addressed the officers on various aspects of the surgery of the war and the questions for the civilian physician called to army life. Colonel Goodwin spoke on practical medical military lessons of the war, bringing up particularly questions of transportation and evacuation of the wounded.

PARADE AND REVIEW

The afternoon was closed with a parade and review of the medical officers' training camp. Some 5,000 men passed in review before the visitors. Just previous to the parade, Surgeon-General Gorgas arrived from Washington in time to see the brilliant strides made by the medical officers and the enlisted men of the medical department in their new duties.

THE BARBECUE

At 5:30 a barbecue supper, which had been prepared under the direction of Capt. Charles Parkes, M. R. C., Chicago, willing to associate with him although every company has at least two of indefinite ancestry. Later on he succeeded in removing most of the effluvia in an attempt to rout out a recalcitrant woodchuck; the remainder was washed off by a forced bath in Fall Creek. The officers of the Public Health Service were inclined to quarantine him, but relented following the disinfection and cleansing mentioned.

Some 300 civilian visitors took part in the barbecue. This gave opportunity to student officers to call each other major, and a few even became colonels pro tem.

The field ambulance at Fort Benjamin Harrison is equally divided among motor and army mule transportation. The American army mule was a subject of the greatest admiration to the foreign visitors, as were also the cavalry horses available at Fort Benjamin Harrison. Colonel Goodwin expressed sadness, as did many of the other American officers, at the gradual replacing of the "animals" by the less personal motor.

Colonel Dircle bears the scars of ninety-six shrapnel wounds.

At the barbecue supper four whole beeves, eight sheep, four pigs, 500 pumpkin pies, 4,000 doughnuts, ten barrels of sweet potatoes and six barrels of apples were eaten. The trimmings included thirty-five cases of celery and 100 pounds of salted peanuts.

On the platform at Fort Benjamin Harrison. From left to right: W. Colby Rucker, Asst. Surgeon-General, U. S. P. H. S.; Col. Edward L. Munson, M. C., U. S. A.; Surgeon-General Rupert Blue, U. S. P. H. S.; Capt. J. Gilmore, R. A. M. C.; Col. Charles Dircle, French Army Medical Corps; Major Eduard Rist, French Army M. C.; Col. T. C. Goodwin, R. A. M. C.; Capt. George A. Lung, Medical Director, U. S. N., and Col. Henry Page, commandant, M. O. T. C., Fort Oglethorpe, Ga.

mess sergeant of Company No. 1, attracted the immediate attention of visitors, student officers and a host of guests.

THE NIGHT SESSION

The chilly night air and the fact that the motion pictures to accompany the address of Col. Charles Dirkel on "Medical Service on the Western Front" were not adapted to the motion picture machine caused the assembly to seek the neighborhood of the numerous bonfires. In the interim until new pictures could be brought, Surgeon-General Gorgas made a brief address and the choruses of the various companies vied in singing songs of the training camp. A parade symbolizing the changes in the medical officer from his first arrival in camp until the completion of his course of instruction was one of the features of the evening.

NOTES

A sensation was created when Major McCormick's dog leaped into the sewage disposal pit, evidently believing it was the River Marne. He came out covered with ignominy and other things, and leaped into the major's car. The occupants of the car gave the dog complete possession, until he departed, and he could hardly find a dog on the grounds

During the parade and review Colonels Page, Bispham, Bingham and other instructors from the rival training camps stood around, watched the review and gnashed their teeth.

Exchange of Medical Officers Between France and Germany

The Germans accepted in 1916 the proposal to exchange the medical prisoners of war, and about three fourths of the French medical officers kept captive in Germany had been returned by October, but then no more were allowed to leave Germany. In April, 1917, the German government took up the matter again, and sent a list of their medical captives which they were willing to exchange. The French government checked up the list and designated the sixteen physicians and 759 other members of the sanitary service who had been designated in the agreement dated July, 1916, and demanded that these should be repatriated first of all. Germany accepted this, and the party recently arrived at Lyons. It has been agreed that the other medical officers and sanitary force are to be repatriated now in turn, and with the least possible delay.

New Units to Camp

Two new units comprising Red Cross Ambulance Companies No. 4, Cleveland, and No. 3, Minneapolis, have reached the United States Ambulance Service Training Camp, Allentown, and a headquarters unit has been established at the camp by Director Col. Elbert E. Persons, under command of Col. Rossner E. Graham, M. R. C., New Orleans.

Court Martial

Asst. Surg. Thomas A. Fortescue, U. S. Army, is said to have been tried by general court martial at the Navy Yard, Norfolk, Va., on a charge of culpable negligence and inefficiency in the performance of duty, and to have been sentenced to lose three numbers. The Secretary of the Navy has approved the proceedings.

Bushnell's Retirement

Col. George E. Bushnell, M. C., U. S. Army, was transferred to the retired list, September 4, on attaining the age of 60. Colonel Bushnell entered the Medical Corps in February, 1881. He has given especial attention to the study of tuberculosis, and for many years he has been in command of the general hospital devoted to the treatment of tuberculosis at Fort Bayard, New Mexico.

Personal

Lieut.-Col. Robert B. Grubbs, M. C., U. S. Army, was retired from active service, September 21, on account of disability incident to the service.——Surg-Gen. Presley M. Rixey, U. S. Navy, retired, has been recalled to active duty, and is now making an inspection tour of the Naval Coasts and Hospitals in the United States.——Capt. John S. Fulton, Baltimore, has been added to the board to prepare material for a medical and surgical history of the war.——Medical Inspector Frank L. Pleadwell, U. S. Navy, has returned after service in England and along the western front since May, 1916. During this time he visited sixty-four hospitals, five ambulance trains, six training and convalescent camps, twenty naval vessels, including eleven hospital ships, and four medical service schools, the High Seas fleet, the British trenches in France and the Italian front on the Isonzo.——Capt. James W. Inches, M. R. C., U. S. Army, health officer of Detroit, who sailed for France, September 5, as a member of a Red Cross Mission to investigate the needs of soldiers at the front, arrived, September 25.

NEWS OF THE TRAINING CAMPS

At Fort Oglethorpe

The week of October 1, at Camp Greenleaf has, from a seasonal point of view, been one of the most delightful since the beginning of camp. Early autumn weather of the choicest sort prevailing, with its accompanying harvest moon, has made the nights poetic dreams. One of the most beautiful nights was taken advantage of by the commandant who gave a lecture out in the open, there being no other illumination than the moon. The lecturer was at his best, the scenic effect beautiful beyond description, and the impression made on the men a lasting one.

MESS AT FORT OGLETHORPE

A distinct departure from the mess as conducted at the other Medical Officers' Training Camps is that initiated by Col. Henry Page at Camp Greenleaf, Fort Oglethorpe, Ga. The medical officers are marched into the mess hall at "attention" and are seated in order. After mess the men are again called to attention, and empty plates are shown. The reduction in wastage approximated 60 per cent. when an average ration was served to each man, and empty plates were shown after mess. This might be regarded as a practical demonstration in food conservation.

First session of the Association of Military Surgeons at the Medical Officers' Training Camp, Fort Benjamin Harrison. Surgeon-General Rupert Blue, U. S. P. H. S., president of the association, delivering the opening address.

HIKES

Practice hikes have been in order this week and five or six marches have been made. On Friday the entire student body hiked to Jays Mill, the spot where the battle of Chickamauga started, and witnessed the erection of a complete field hospital. Lieutenant-Colonel Carswell, the director of field hospitals, was in charge and the demonstration he gave was a most interesting one.

NEW MEN

There has been an influx of new men into camp this week and at present there are nearly 1,400 medical officers here. The ages of the men are younger than at the first camp.

NEW INSTRUCTORS

Lieut.-Col. Roger Brooke, the senior instructor, has increased his corps of instructors and now he has courses so arranged that the new men do not have to enter in the midst of the course without knowing what has gone on before. The brunt of the teaching has fallen on the shoulders of Colonel Brooke and his ability as an instructor is unsurpassed. The majority of the men acclaim him as superior to their old "profs." which within itself is somewhat of a miracle for it is a well known fact that medical men seldom acknowledge that any one can compare with the instructors in their old alma mater.

RETREAT

Each evening at 5:15 o'clock retreat is held at Camp Greenleaf and the spectacle of so many physicians, many of whom enjoy national reputations, in formation draws countless throngs from Chattanooga and vicinity to witness it. It is most imposing and the lines, as they pass the reviewing officer, are well nigh perfect. A line officer who was present a few evenings ago paid them the very high compliment of saying "they drill like regulars."

PERSONALS

A negro minstrel show, composed entirely of members of this camp, was given at the amphitheater a few evenings ago and was greatly enjoyed. There were many wives of the officers present in the audience. Lieutenant Lemkowitz brought down the entire house when he said that Chattanooga was not a city but a saluting station for Camp Greenleaf.

MARRIAGE OF MAJOR KIRK

Major Norman C. Kirk, M. C., one of our youngest and most popular instructors, put one over on the entire camp last Friday evening by slipping over to the post chapel and marrying Miss Duryea of New York. The proper way to write up a wedding is to mention how the bride was dressed, whether or not she carried a bouquet, and say a word or two about the wedding march, and devote the rest of the space to those present, but owing to the modesty of the guilty parties no one knows about these highly important facts except the parson and he will not tell us a "darn" thing. If good wishes have anything to do with it they will have a long, happy and prosperous voyage on the sea of matrimony.

Major A. C. Abbott gave a most instructive lecture on the fly last Thursday evening. It was illustrated by moving pictures which told in story the dangers of the fly.

Major Owen has been joined by Mrs. Owen and family, who are living on Missionary Ridge.

Capt. Newdigate M. Owensby, M. R. C., has returned from a short visit to Baltimore.

THE NATIONAL GAME

Last Sunday a baseball gave was played on Dyer Field between student companies number 8 and 3. Three company was the victor and is now thinking of issuing a challenge to the winners of the world's series.

Colonel Page, M. C., the commandant, is on a visit to Fort Benjamin Harrison to attend the meeting of the Association of Military Surgeons.

Orders to Officers of the Medical Corps

Lieut.-Col. Robert B. Grubbs, retired, now on duty at the Walter Reed General Hospital, Takoma Park, D. C., is detailed as examiner and witness before the Army Retiring Board, appointed to meet at Washington, D. C., of which Brigadier General Thomas S. Cruse, Quartermaster General, is president; and Major Raymond C. Bull, retired, is relieved.

To San Antonio, Tex., from Fort Logan H. Roots, Ark., and report by letter to the Surgeon General of the Army for the purpose of making special sanitary inspection, Col. William F. Lewis.

To Washington, D. C., from duty at Camp Edge, Sea Girt, N. J., and report in person to the Chief Signal Officer, Aviation Section, Signal Corps, for duty with the Medical Department of the Aviation Section, Signal Corps, Lieut. Col. Nelson Gapon.

To Washington, D. C., from U. S. Army General Hospital No. 1, New York City, for consultation with the Surgeon-General of the Army, Colonel Edward R. Schreiner.

To Watertown, N. Y., Maj. H. W. Jones, to inspect ambulance bodies, and return to Washington.

To Chickamauga Park, Lieut. Col. C. E. Morrow from Madison Barracks, as surgeon of second Regular Army division.

To Surgeon-General's Office, Maj. W. L. Hart, temporarily, then return to Chicago.

To Surgeon-General's Office, Col. D. C. Howard from Canal Zone.

To Camp Sherman, to command Base Hospital, Maj. E. G. Huber, from headquarters Central Department.

The spread for mess at Fort Oglethorpe.

Orders to Officers of the Medical Reserve Corps

ALABAMA

To Camp Shelby, Hattiesburg, Miss., for duty, Capt. Henry B. Powell, Bessemer.

To Camp Sheridan, Montgomery, Ala., from Fort Oglethorpe, for duty, Lieut. Frederick Wilkerson, Montgomery.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Charles R. Palmer, Tuscumbia.

To Camp Wheeler, Macon, Ga., 31st Division, for duty, Lieut. George G. Oswalt, York.

To Fort Des Moines, Iowa, for instruction, Lieut. Elisha H. Jones, Talladega.

To Fort Oglethorpe, for instruction, Lieuts. Augustus D. Mathews, Ariton; Harry R. Cogburn, Baylow Labatre; Thomas K. Lewis, Birmingham; Thomas W. Taylor, Dozier; Herbert L. Phillips, Yantley.

ARIZONA

To Fort Oglethorpe, for instruction, Capt. Roderick D. Kennedy, Globe.

To Linda Vista, Calif., for duty, Capt. L. Jacobs, Yuma.

ARKANSAS

To Atlanta, Ga., for duty, Lieut. A. G. Kelley, DeWitt.

To Camp Beauregard, Alexandria, La., from Camp Pike, Ark., for duty with the First Arkansas National Guards, Lieut. James E. Phillips, Eureka Springs.

To Fort Oglethorpe, for instruction, Lieuts. Forrest P. Baker, Booneville; Floyd Clardy, James W. Ramsey, Jonesboro; Henry P. Ledford, Seppel; George A. Causey, Swifton.

CALIFORNIA

To Camp Cody, Deming, N. M., for duty, Capt. J. K. Ransom, Newman; with 34th Div., Lieut. Colin C. Owen, San Bernardino.

To Camp Kearney, Linda Vista, Calif., for the purpose of conducting cardiovascular examinations and upon completion to return to his home and to the inactive list of the Medical Reserve Corps, Major Walter V. Brem, Los Angeles; for duty as tuberculosis examiners, Capts. Joseph A. Parks, San Diego; William R. P. Clark, James L. Whitney, San Francisco; for duty, C. W. Kellogg, Bakersville; for duty as members of tuberculosis examining board, Lieuts. Henry A. Holt, Pasadena; E. H. Falconer, San Francisco; for duty, Greg Hoskins, Ferndale; F. B. Tapley, Marysville; for duty with 40th Div., as assistant in the care of cardiovascular cases, K. Berkley, San Francisco.

To Camp Lewis, American Lake, Wash., for duty, Lieuts. Richard W. Soper, Berkeley; Charles F. Curtis, Martin P. Hamrick, Los Angeles; R. M. Cox, San Luis Obispo.

To Fort Douglas, Utah, for the purpose of examining troops in his specialty, Major James R. Moore, Los Angeles; for duty, Capt. David B. Fields, Weaverville.

To Fort Oglethorpe for instruction, Lieuts. Gordon A. Clapp, Lindsay; Pierre N. Charbonnet, Fort McDowell; Ezra R. Bridge, Lavina; William J. Erkenbeck, San Diego.

To Garden City, L. I., for duty, Capt. N. L. Deming, Litchfield.

To Fort Oglethorpe for instruction, Lieut. George H. Dalton, New Britain.

To St. Elizabeth Hospital, Washington, D. C., for a course of study in his specialty, Capt. Arthur B. Coleman, Middletown.

Honorably discharged, Lieut. U. Gardner, New Haven.

DELAWARE

To Camp Wheeler, Ga., for duty, Lieut. H. S. Miller, Wilmington.

DISTRICT OF COLUMBIA

To Camp Dodge, Des Moines, Ia., for duty, Lieut. W. J. Howard, Jr., Washington.

To Camp Gordon, Atlanta, Ga., from Rockefeller Institute, for duty as assistant to the Chief of the Surgical Service, Capt. Edwin M. Harbrouck, Washington.

To Camp Meade, Annapolis Junction, Md., for duty, Lieut. D. L. High, Washington.

To Fort Des Moines, Ia., for instruction, Lieuts. Moses Clayborne, William J. Howard, Jr., Washington.

To Newport News, Va., for duty with 301st Regiment, Lieut. C. C. Marbury, Washington.

To his home, from duty at Rockefeller Institute, New York, N. Y., Lieut. Harry H. Kerr, Washington.

FLORIDA

To Camp Gordon, Atlanta, Ga., with the division of otolaryngology, section of surgery of the head, Capt. A. H. Freeman, Starke.

Empty plates up after mess at Fort Oglethorpe.

To Letterman General Hospital, San Francisco, Calif., for duty, Lieuts. Harold Zimmerman, Sacramento; Frank B. Reardan, Turlock.

To Philadelphia, Pa., Jefferson Hospital for instruction in military roentgenology, Lieut. Robert P. Sturr, San Francisco.

To his home, from duty at Fort Oglethorpe, and return to inactive list of the Medical Reserve Corps, Lieut. Joseph M. Thueringer, Mobile.

COLORADO

To Camp Bowie, Ft. Worth, Tex., from Ft. Riley, and report to Commanding General 36th Division for duty, Capt. John S. Fox, Silverton; Lieut. Lloyd R. Allon, Colorado Springs.

To Camp Logan, Houston, Tex., for duty, Lieut. J. H. Brown, Colorado Springs.

To Camp Mills, Garden City, N. Y., with Colorado Field Hospital No. 4, Capt. H. G. Garwood, Denver; Lieut. G. W. Bancroft, Colorado Springs.

To Camp Sheridan, Montgomery, Ala., 37th Division, for duty, Lieuts. A. M. Forster, H. W. Hoagland, Colorado Springs.

To Fort Oglethorpe, for instruction, Capt. Cyrus L. Persing, Lieuts. Edward W. Collins, William A. Sedwick, Arthur W. Stahl, Denver.

CONNECTICUT

To Camp Bowie, Ft. Worth, Tex., from Ft. Riley, and report to Commanding General, 36th Division, for duty, Capt. Arthur B. Landry, Hartford.

To Camp Devens, Ayer, Mass., for duty, Lieuts. W. H. Flynn, Hartford; L. J. Loewe, Hegganum.

To Camp Taylor, Louisville, Ky., from Ft. Benjamin Harrison, for duty in connection with sanitary train work, Lieut. James E. Hutchison, Hartford.

To Chickamauga, Ga., for duty as division sanitary inspector, Major Chauncey L. Chase, Ford Dade; for duty with Field Hospital Section, Sanitary Train, Lieuts. Turner Z. Cason, Jacksonville; for duty with Headquarters Military Police, Lucian B. Dickerson, Clearwater.

To Fort Oglethorpe for instruction, Capt. William B. Moon, to Medical Officers Training Camp as instructor in gas defense, Lieut. R. Leffers, Lakeland.

To Hattiesburg, Miss., Camp Shelby, 38th Division, as member of a board for special tuberculosis examination, Lieut. J. E. Gammon, Jacksonville.

GEORGIA

To Camp Doniphan, Okla., for duty, Lieut. C. J. Woods, Darien.

To Camp Gordon, Atlanta, Ga., for duty, Lieuts. L. J. Keeling, J. C. McDougall, Atlanta; Homer G. Lightner, Montezuma.

To Camp Harris, Macon, Ga., for duty, Capt. Melton D. Council, Macon; Lieuts. Herschel A. Smith, Americus; Francis Y. Harrington, Atlanta; John P. Holmes, Macon.

To Camp Sevier, Greenville, S. C., and report in person to the Commanding General of the camp and the Commanding Officer of the Base Hospital for duty, Lieut. James F. Wallis, Lovejoys Station.

To Fort Des Moines, Ia., for instruction, Lieut. Lexius H. Harper, Augusta.

To Fort Oglethorpe, for instruction, Capt. Harry Rubin, Savannah; Lieuts. Erle T. Newsom, Camilla; James H. MacDuffie, Columbus; Algernon C. Colson, Lyons.

To Fort Ontario, N. Y., with Field Hospitals and Ambulance Cos. Nos. 28 and 30, Lieut. H. H. Lang, Augusta.

To his home, from duty at Army Medical School on account of being physically disqualified, Lieut. Jesse H. Campbell, Jefferson.

IDAHO

To Camp Cody, Deming, N. M., 54th Division for duty, Lieut. Francis P. Richards, Pocatello.

ILLINOIS

To Army Medical School, Washington, D. C., Lieut. W. F. Petersen, Chicago.

To Camp Bowie, Ft. Worth, Tex., and report to commanding general 36th Division, for duty, Capt. George W. Clarke, Roseville; for duty, Lieuts. Willard P. Earngey, Argyle; Charles W. Monroe, Arthur; Robert S. Berghoff, Harry B. Bernhardt, Jesse F. Boone, Charles W. Colebaugh, William H. Howard, Chicago; August C. Armbruster, Collinsville; Walter W. Boyne, East St. Louis; Lester W. Baker, Herrin, Harlan W. Brink, Hopedale; William E. Chapman, Leland; John L. Aleshire, Plainville; Archie S. Horn, Tampico; Paul R. Allyn, Walter H. Allyn, Waverly.

To Camp Cody, Deming, N. M., from Ft. Riley, for duty, Lieuts. Frank O. Kunz, Beardstown, Louis D. Hughes, Carbondale; Earl B. Miller, Chicago; Reuben A. Moffett, Ladd.

To Camp Dodge, Des Moines, Ia., for duty as chief of the medical service, Major J. L. Miller, Chicago.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Capt. Francis M. Edwards, Centralia; Lieuts. John W. Cornell, John M. Krasa, Albert Martin, Eugene P. Wright, Chicago; Charles M. Fuson, Harrisburg; David A. Morgan, Milwood; Benjamin C. C. Schnell, New Baden; Charles K. Barclay, New Lenox.

To Camp Grant, Rockford, Ill., for duty with 86th Division, as tuberculosis specialist and assistant to the Army Medical Staff, Capts. John H. McClellan, Chicago; for duty, Arthur N. McCord, Streator; Emil Windmueller, Woodstock; Lieuts. Carl V. A. Weichelt, Barrington; George A. McDonald, Goldengate; Richard J. Miller, Kincaid; Orin R. Wakefield, Princeton.

To Camp Mills, Garden City, I. S., from Fort Logan, Tex., for duty with the 42d Division, Lieut. Henry S. Babcock, Danville.

To Camp Pike, Little Rock, Ark., from Fort Oglethorpe, for duty with 87th Division, as tuberculosis specialist and assistant to the Army Medical Staff, Lieut. Arthur G. Compton, Chicago.

To Camp Sheridan, Montgomery, Ala., from Fort Benjamin Harrison, for duty as member of tuberculosis examining board, Lieut. James A. Britton, Chicago.

To Camp Sherman, Chillicothe, O., for duty, Lieuts. G. B. Butt, Chicago; for duty in division of ophthalmology, Section of Surgery of the Head, John W. Earle, Quincy.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Capt. Charles Stevens, Lieuts. William R. Larkin, Chicago; Charles F. Childs, New Boston.

To Camp Wadsworth, Spartanburg, S. C., for duty, Lieut. John V. Dillman, Louisville.

To Chicago, Ill., County Hospital for a course of instruction in military roentgenology, Lieut. Alfred T. Eide, Chicago.

To Detroit, Mich., for duty with Base Hospital No. 36, Lieut. F. L. Stone, Chicago.

To Fort Benjamin Harrison, for instruction in tuberculosis examination, Lieut. Clarence N. Cheadle, Rockford.

To Fort Des Moines, Ia., for instruction, Lieuts. John R. Finley, Chicago; Alonzo T. Griffin, Mound City, Hosea J. Nichols, Quincy.

To Fort Oglethorpe for instruction, Capts George A. Kelso, William A. N. Dorland, Chicago; Lieuts. Herschel V. Brunker, Casey; Robert H. Henderson, William J. Siegler, James A. Valentine, Hulitt J. Wyckoff, Chicago; Lloyd L. Tate, Parrish; Peter T. Spurck, Peoria; Herman C. Tietze, West Salem; for duty, Davis R. Scott, Macomb; for duty as instructor in gas defense, Franz H. Harms, Chicago.

To Fort Riley, in the psychiatric department of the base hospital, Capts. W. D. Napheys, Jr., for duty W. H. Allport, Lieuts. A. G. Bower, C. J. Schoenfeld, Chicago.

To Fort Sheridan, Ill., for duty, Lieut. W. A. Clark, Chicago.

To Fort Worth, Tex., Signal Corps Aviation School, now being established, Lieut. P. J. Lewis, Chicago.

To Hatticsburg, Miss., for duty with 38th Division, as member of board for special tuberculosis examination, Capt. R. E. Adkins, Chicago.

To Mineola, N. Y., for duty, Lieut. G. C. Otrich, Belleville.

To Newport News, Va., for duty with 301st Regiment, Lieuts. J. P. Kissel, Centralia; P. P. Haslitt, Marshall.

To Rockefeller Institute, New York, N. Y., for instruction in laboratory work, Lieut. Joe H. St. John, Chicago.

To Washington, D. C., with the division of ophthalmology, section of surgery of the head, Major W. R. Parker, Dixon.

To Yaphank, N. Y., for duty, Capt. J. G. Frost, Chicago.

To inactive list of Medical Reserve Corps, from duty at Fort Sheridan, Ill., Lieut. Clyde D. Pence, Chicago.

Review at Fort Oglethorpe: In the foreground at the left is Col. Henry Page, commandant of the Medical Officers' Training Camp, Fort Oglethorpe; in the center, Col. T. C. Goodwin, R. A. M. C.; standing, in the light uniform, Col. Charles Dircle, French Army Medical Corps; and Colonel La Garde, M.C., U. S. Army, ret.

To home, from duty at Camp MacArthur and return to the inactive list of the Medical Reserve Corps, Capt. Charles F. Sanborn, Chicago.

Honorably discharged on account of being physically disqualified for active service, Capt. Homer H. Thomas, Chicago.

INDIANA

To Camp Beauregard, Alexandria, La., from Fort Oglethorpe, 39th Division, for duty, Lieut. David B. Davis, Thorntown.

To Camp Funston, from Medical Officers Training Camp, Fort Riley, for duty, Capt. George W. Newell, Peru; Lieuts. Frederick S. Deem, Solsberry; T. P. Caplinger, Wallace.

To Camp Grant, Rockford, Ill., for duty, Capt. Daniel A. Campbell, Boonville; Lieuts. Walter W. Wright, Edinburg; Hubert P. Butts, Pierceville.

To Camp Logan, Tex., for duty, Lieut. W. D. Calvin, Ft. Wayne.

To Camp Mille, Garden City, N. Y., with the field laboratory 42d Division, Capt. H. C. Knapp, Huntingburg.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieuts. Samuel R. Laubscher, Evansville; Edgar N. Mendenhall, Fort Wayne; Claude H. White, Monrovia.

To Fairfield, O., for duty, Lieut. E. D. Jewett, St. Paul.

To Fort Benjamin Harrison with Base Hospital No. 32, Lieuts. E. Funkhouser, Indianapolis; for duty, L. T. Cox, Napoleon.

To Fort Oglethorpe for instruction, Lieuts. Brose S. Horne, Gas City; Harry G. Erwin, Huntertown; Bernard J. Larkin, Indianapolis; John E. Kelly, National Military Home; John G. Ross, Portland; Melcherd H. Kutch, Terre Haute.

To Fort Ontario, N. Y., duty with Field Hospital and Ambulance Cos., Nos. 28 and 30, Lieut. A. E. Mozingo, Tipton.

To Fort Riley, for duty, Lieut. Walter F. Hickman, Indianapolis.

To Newark, N. J., for duty, Lieut. G. Williams, Crawfordsville.

IOWA

To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general 36th Division, for duty, Capt. George G. Skinner, Cedar Rapids; Lieuts. Clifford L. Bartlett, Clinton; Harry L. Bridgman, Columbia; John R. Christensen, Eagle Grove; William F. Brown, Keokuk; J. Willard Caldwell, Steamboat Rock.

To Camp Cody, Deming, N. M., from Ft. Riley, for duty, Lieut. Paul F. Guernsey, Bloomfield.

To Camp Dodge, Des Moines, Ia., for duty as Chief of the Surgical Service, Major Charles E. Ruth, Des Moines.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Capts. Arthur A. Pace, Toledo; Fordyce H. McCabe, Wellman; for duty, Lieut. Clarence H. Kinneman, Keokuk.

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieut. Aaron C. Conaway, Marshalltown.

To Camp Greenleaf, Fort Oglethorpe, Ga., for duty, Lieut. A. E. Acker, Ft. Dodge.

To Fort Dodge, Des Moines, Ia., 188th Division, for duty as member of board of medical officers for examination for tuberculosis, Capt. John H. Peck, Des Moines.

To Fort Leavenworth, Kan., for duty, Lieut. C. C. Cady, Harris.

To Fort Oglethorpe for instruction, Lieuts. Harry C. Nichols, Carson; Ira J. Gibson, Fontanelli; Thomas R. Gittens, Iowa City.

To Rockefeller Institute, New York, N. Y., for instruction in laboratory work, Capt. Guthrie McConnell, Waterloo.

To St. Elizabeth Hospital, Washington, D. C., from Phipps Clinic, Baltimore, Md., for course of study in his specialty, Capt. Richard G. Eaton, Cherokee.

To Washington, D. C., Aviation Section, Signal Corps, United States Army for duty, Capt. Eugene R. Lewis, Dubuque.

KANSAS

To Camp Beauregard, Alexandria, La., from Camp Lewis, American Lake, Wash., Lieut. Charles W. Cole, Norton.

To Camp Bowie, Fort Worth, Tex., from Ft. Riley and report to commanding general 36th Division for duty, Lieut. Robert E. Eagan, Spring Hill.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Lieuts. Milton O. Nyberg, Ashland; Frederick R. Hickey, Chanute; Tarlton A. Hood, Garnett; John E. Hammer, Hardtner; Walter N. Mundell, Hutchinson; Fred E. Harvey, Minneapolis; Hugh B. Hawthorne, Palmer; Charles S. Adams, St. John; Henry S. Dreher, Waldo; Walton I. Mitchell, George K. Purves, Wichita.

To Camp Greene, Charlotte, N. C., from Fort Oglethorpe, for duty as member of board of medical officers for examination for tuberculosis, Lieut. Jacob H. Haldeman, Paola.

To Camp Lewis, American Lake, Wash., for duty, Lieut. Rinaldo E. Baker, Belle Plain.

To Camp Pike, Little Rock, Ark., for duty with Ambulance Company No. 44, Lieut. A. M. Dawson, Topeka.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison for duty in connection with sanitary train work, Lieut. Clyde M. Zink, Wellington.

To Fort Des Moines, Ia., for instruction, Lieut. Frank O'H. Miller, Wichita.

To Fort Leavenworth, for duty, Lieut. F. D. Kennedy, Norton.

To Fort Logan, Colo., with 1st Colo. Inf. Lieut. E. G. Brown, Topeka.

To Fort Oglethorpe for instruction, Capt. John F. Rudolph, Belle Plaine.

To Fort Riley for duty, Lieut. John D. Riddell, Salina.

KENTUCKY

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieut. George E. Aubrey, Kevil.

To Camp Hancock, Augusta, Ga., for duty, Lieut. S. G. Smith, Greenup.

To Camp Meade, Md., for duty, Lieut. S. Keffer, Ashland.

To Camp Shelby, Miss., for duty, Capt. J. Hancock, Louisville.

To Fort Des Moines, Ia., for instruction, Lieuts. Patterson T. Frazer, Jr., Cadiz; Walter S. Adams, Robert L. Oliver, Louisville; Royal W. Grubbs, Paducah.

To Fort Oglethorpe for instruction, Capt. Horace Luten, Fulton; Lieuts. Mark D. Gundrum, Covington; John R. Shacklette, Jeffersontown; Hubett R. John, Lamar W. Neblett, Harry L. Pelle, Louis C. Rudell, Louisville; Timothy T. Gibson, Middleboro, Millard D. Hoskins, Varilla.

To Fort Ontario, N. Y., duty with Field Hospital and Ambulance Cos., Nos. 28 and 30, Lieut. S. H. Martin, Covington.

To Macon, Ga., 31st Division, National Guard, Capt. E. Rau, Bowling Green.

To Rockefeller Institute, New York, N. Y., for instruction, Major Arthur T. McCormack, Bowling Green.

To his home and return to the inactive list of the Medical Reserve Corps, Lieut. Arthur C. Henthorn, Garrison.

LOUISIANA

To Atlanta, Ga., for duty, Capt. C. P. Brown, New Orleans.

To Camp Beauregard, Alexandria, Ia., for duty as chief of the medical service, Majors J. B. Guthrie, New Orleans, with 39th Division, for duty as a member of tuberculosis examining board, Whyte G. Owen, White Castle.

To Fort Des Moines, Ia., for instruction, Lieut. Jamison C. Mills, Shreveport.

To Fort Oglethorpe for instruction, Capt. James C. Burdett. Pelican.

MAINE

To Boston, Mass., for duty with 26th Division, Lieut. F. L. Gregory, Caribou.

To Camp Devens, Ayer, Mass., for duty as orthopedic surgeon, Major W. C. Peters, Bangor.

To Camp Grant, Rockford, Ill., for duty from Fort Benjamin Harrison, Capt. Philip W. Davis, Portland; Lieut. Ralph W. Wakefield, Bar Harbour.

To Fort Logan, Ark., for duty, Lieut. A. Woodcock, Bangor.

To Fort Monroe, Va., for duty, Lieut. Herbert L. Williams, Auburn.

To Portland, Me., physical examining unit, Av. Sec. S. R. C., Lieut. C. D. Gray, Portland.

To Walter Reed General Hospital, Washington, D. C., from Boston, Mass., for instruction in tuberculosis examinations, Capt. Nelson E. Nichols, Portland.

MARYLAND

To Camp Meade, Annapolis Jct., Md., for duty, Capt. Charles H. Conley, Frederic; Lieut. A. W. Reier, Baltimore.

To Deming, N. M. Camp Cody, as assistant to the care of cardiovascular cases, Capt. H. R. Carter, Baltimore.

To Fort Oglethorpe for instruction, Lieuts. W. W. Anderson, Everett LeC. Cook, Baltimore; George W. Bishop, Govans.

To Fort Riley for duty, Capt. Albert W. Metcalf, Jr., Fort Washington.

To Neurological School, University of Pennsylvania, Philadelphia, for four weeks on intensive training in brain surgery, Major F. Martin, Baltimore.

To New York, N. Y. Rockefeller Institute, Major G. A. Stewart, Baltimore.

To St. Elizabeth Hospital, Washington, D. C., for a course of study in his specialty, Capt. Daniel D. V. Stuart, Jr., Baltimore.

To return to inactive list of Medical Reserve Corps from School of Roentgenology, Johns Hopkins Hospital, Baltimore, Lieut. John Evans, Baltimore.

Honorably discharged, Lieut. Harry H. Johnson, Baltimore.

MASSACHUSETTS

To Camp Devens, Ayer, Mass., for duty as chief of the medical service, Major Joseph H. Pratt, for duty as Adjutant of the Base Hospital, Capt. Arthur H. Crosbie, for duty as assistant to the Chief of the Surgical Service, Lieut. John J. Stack, Boston.

To Camp Grant, Rockford, Ill., for duty from Fort Benjamin Harrison, Capt. William E. Hamlin, Waltham; Lieuts. Clarence E. Burt, New Bedford; Johnston L. Chereskin, Springfield.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieuts. Charles J. Carden, Haverhill; Edward S. Ward, North Attleboro; William E. Denning, Worcester.

To Fort Leavenworth for the purpose of making examinations in his specialty, Lieut. Ralph M. Chambers, Westboro.

To Fort Oglethorpe for instruction, Lieuts. William F. MacKnight, Fall River; Leighton P. Johnson, Norwood.

To Garden City, N. Y., with 42d Division, from Boston 26th Division, Lieut. W. E. Baxter, Topsfield.

To Fort Oglethorpe for instruction, Lieut. Irving W. Fraim, Waltham.

To Fort Ontario, N. Y., for duty with Field Hospital No. 28, Capt. Dana W. Drury, Boston.

To Neurological School, University of Pennsylvania, Philadelphia, for duty, Lieut. William F. Wood, Boston.

To report in person to Major Elijah H. Siter, M. R. C., 1818 S. Rittenhouse Square, Philadelphia, Pa., for examination to determine his physical qualifications for duty, Lieut. Walter D. Berry, South Weymouth.

Honorably discharged from duty at Camp Devens, Ayer, Mass., Capt. James H. Wright, Boston.

MICHIGAN

To Camp Custer, Mich., for duty, Lieuts. A. F. Jennings, Detroit; R. C. Main, Marquette.

To Camp Dodge, Des Moines, Ia., for duty, with Ambulance Co. No. 31, Lieut. A. V. Murtha, Flint.

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Capts. Willard H. Hutchings, Detroit; William W. Arscott, Rogers; Lieuts. Clarence A. Berge, Ann Arbor; George W. Peart, Burt; Lannes I. Condit, Detroit; Raymond M. Schulte, Dollar Bay; George R. Goering, Flint; Louis E. Devendorf, Grandville; Robert H. Carmichael, Hamtramck; Henry A. Kling, Montague.

To Camp Greene, N. C., for duty, Lieut. W. A. DeFoe, Saginaw.

To Camp Lee, Va., for duty, Capt. D. E. MacPhail, Wakefield.

To Camp Sheridan, Ala., Capt. R. A. C. Wollenberg, Detroit.

To Camp Sherman, Chillicothe, O., for duty, Lieut. E. R. Scarboro, Ann Arbor.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison for duty in connection with sanitary train work, Lieuts. Edwin C. Hanzhorn, Ann Arbor; Lieut. Burns R. Eastman, Muskegon.

To Camp Wadsworth, Spartanburg, S. C., to duty in Sanitary Division, Lieut. John M. Carter, Detroit.

To Cornell Medical College, New York, N. Y., for instruction in military roentgenology, Lieut. Theodore Kolvoord, Battle Creek.

To Detroit, Mich., Base Hospital No. 36, for duty, Major H. G. Berry, Mt. Clemens; Capt. J. Sill, Onaway; Lieuts. G. P. Raynale, Birmingham; A. E. Harris, R. A. Shankwiler, E. Smith, Jr., Detroit; G. P. Sackrider, Owosso.

To Fort Oglethorpe, for instruction, Lieuts. Earl R. Harris, Detroit; Jesse O. Parker, Owosso.

To Fort Ontario, N. Y., for duty with Field Hospital and Ambulance Cos. Nos. 28 and 30, Lieuts. G. M. Lochner, Adrian; R. E. Dawson, Blanchard; R. H. Bookmyer, Detroit; R. R. McCrumb, Lansing.

To Fort Snelling, Minn., for duty, Lieut. O. M. Randall, Detroit.
To Garden City, N. Y., for duty, Lieut. C. F. Kuhn, Detroit.
To Spartanburg, S. C., 27th Division, N. G., Lieut. J. M. Carter, Detroit.

MINNESOTA

To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general 36th Division, for duty, Capt. Chester M. Clark, Duluth; Lieuts. John T. Rose, Lakefield; Harry E. Canfield, Willmar.
To Camp Cody, Deming, N. M., from Fort Riley, for duty, Lieut. Roderick F. McHugh, Coleraine.
To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieut. Ward Akester, Marshall.
To Dallas, Tex., for duty, Lieut. J. C. Wilkinson, Red Lake Falls.
To Fort Oglethorpe, for instruction, Lieuts. Solomon F. Rudolf, Albert Lea; Jesse E. Douglass, Thief River Falls; as instructor in gas defense, B. V. Bates, Wheaton.
To Fort Snelling, Minn., for duty, Capt. J. A. Hielscher, Mankato; Lieuts. T. F. Rodwell, White Earth; E. H. Lutz, St. Paul.

MISSISSIPPI

To Camp Shelby, Miss., for duty, Capt. J. R. Tackett, Meridian.
To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Roy C. Elmore, Durant.
To Fort Des Moines, Iowa, for instruction, Lieut. David Rodgers, Laurel.
To Hattiesburg, Miss., Camp Shelby with the division of oro-laryngology section of surgery of the head, Lieut. M. I. Brewer, Jackson.
To Jefferson Barracks, Mo., for duty, Lieut. W. G. White, Lewistown.
Par. 116, Special Orders No. 200, War Dept., Aug. 27, 191, as relates to Capt. Ewing F. Howard, are to be modified so as to direct him to proceed to Camp Logan, Houston, Tex.
Honorably discharged, Capt. James V. May, Port Gibson; Lieut. Arthur G. Trotter, Greenwood.

MISSOURI

To Battle Creek, Mich., for duty, Capt. J. T Cook, St. Louis.
To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general 36th Division, for duty, Capts. Isaac W. Powell, Holcomb; Waldemar Ude, St. Louis; Lieuts. William F. Culbertson, Kansas City; Joseph T. Axline, St. Louis.
To Camp Doniphan, Fort Sill, Okla., for instruction in gas defense, Lieut. Ray Mercer, Canton.
To Camp Funston, for duty, from Medical Officers' Training Camp, Fort Riley, Capts. Edward H. Clark, Kansas City; Olive S. McGinnis, Sedalia; Walter F. Fry, St. Louis; Lieuts. Paul R. Williams, Cape Girardeau; William L. Hoagland, John Wilson, Kansas City; Hilen K. Wallace, St. Joseph; Edward E. Heiple, St. Louis; Otto N. Schudde, Sullivan; for duty with base hospital laboratory, from Army Medical School, Lieuts. Edwin H. Schorer, for duty with Red Cross Ambulance Co. No. 24, Elmer J. Bilick, Kansas City.
To Camp Mills, Garden City, N. Y., for duty with Colorado Field Hospital No. 4, Capt. A. J. Campbell, Sedalia.
To Fort Benjamin Harrison, for instruction in tuberculosis examinations, Lieut. Robert E. Byrns, Koch.
To Fort Des Moines, Ia., for instruction, Lieuts. George W. Hedgepeth, Kansas City; Charles E. Herriott, St. Louis.
To Fort Oglethorpe, for instruction, Lieuts. James E. James, Robert E. Owen, St. Louis; George D. Wells, Strafford; William S. Culpepper, Willow Springs.
To Fort Snelling, Minn., for duty, Capt. R. Burns, Jr., St. Louis.
To Kansas City, Mo., with 2d Missouri Field Artillery, Capt. C. E. Wilson, Kansas City.
To Rantoul, Ill., Aviation Section, Lieut. J. James, St. Louis
To Waco, Tex., Camp MacArthur, for duty, Lieut. Stanley S. Burns, St. Louis.
To Home, and the inactive list of the Medical Reserve Corps, Lieut. Clarence Cardwell, Stella

MONTANA

To Camp Lewis, American Lake, Wash., for duty, Major LeR. Southmayd, Great Falls.
To Fort Oglethorpe, for instruction Lieut. Donald K. Woods, Great Falls.
To Fort Snelling, Minn., for duty, Capt. E. Martin Larson, Great Falls.

NEBRASKA

To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general 36th Division, for duty, Lieuts. Abel B. George, Beatrice; William H. Crawford, Rushville.
To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Capt. John Buis, Pender; Lieuts. Edgar Cline, Auburn; William O. Akers, Omaha; Charles P. Brenn, Western.
To Camp Wadsworth, Spartanburg, S. C., from Walter Reed General Hospital, Tacoma Park, D. C., for duty as member of the tuberculosis examining board, Lieut. William N. Anderson, Omaha.
To Fort Benjamin Harrison, for instruction in tuberculosis examination, Lieut. John F. Allen, Omaha.
To Rockefeller Institute, New York, N. Y, for duty, Capt. Judd A. Strong, Kearney; for duty in connection with infectious diseases, at Camp Mills, Lieut. Edward H. McLean, Omaha.

NEW HAMPSHIRE

To Boston, Mass., for instruction in military roentgenology, Lieut. Wallis D. Walker, Portsmouth.
To Fort Benjamin Harrison, as instructor in gas defense, Lieut. J. A. Drew, Rumney.
To Fort Oglethorpe, Ga., for instruction, Lieut. Ralph A. Richardson, Franklin.
To home, and inactive list of the M. R. C., Lieut. Clarence E. Dunbar, Manchester.

NEW JERSEY

To Camp Cody, Deming, N. M., from Fort Riley, for duty, Lieut. Charles S. Brady, Union Hill.
To Camp Dix, Wrightstown, N. J., Lieut. H. E. Dwyer, Passaic.
..To Camp Doniphan, 35th Division, for duty, Lieut. H. C. Woolley, Pitman.
To Camp Grant, Rockford, Ill., Lieut. Max H. Stern, Jersey City, N. J.
To Camp Taylor, Louisville, Ky., Lieut. Samuel E. Weiner, Atlantic City, for duty in connection with sanitary train work.
To Camp Wheeler, Ga., for duty, Capt. A. N. Jacob, Sparta.
To Cornell Medical College, New York, for instruction in military roentgenology, Lieut. Irving S. Ingeber, Secancus, N. J.
To Fort Hamilton, N Y., for duty, Lieut. Francis K. MacMurrough, Jersey City.
To Fort Oglethorpe, Ga., Lieut. P. Du B. Bunting, Elizabeth, as instructor in gas defense; for instruction, Lieuts. Virgil H. Cornell, Cedar Grove; Percy E. Deckard, Jersey City; Charles H. Conover, Tuckerton, and Frederic H. Thorne, Greystone Park.
To Newark, for duty, Capt. J. MacDonald, Jr., East Orange.
To New York, N. Y., U S. Army General Hospital No 1, for duty, Lieut. Raymond C. Dodd, Glen Ridge
To Rockford, Ill. Camp Grant, from Salem, N. J., with 86th Division, Capt. C. E. MacDonald, Salem.
To Salem, N. J., for duty, Lieut. J. M Dix, Cape May.

NEW YORK

To Army Medical School, Lieut. C. B. Reed, New York City; for duty in the bacteriologic laboratory, Lieut. James C. Barker, New York City.
To Atlanta, Ga., and report to commanding officer, department laboratory, for duty, Lieut. Joseph W. Smith, Jr., Brooklyn.
To Camp Cody, N. M., for duty, Capt. L. S. Shoninger, New York City.
To Camp Dix, Wrightstown, N. J., from Camp Mills, Garden City, L. I., for duty as tuberculosis specialist and assistant to the Army Medical Staff, Capt. William J. Hammer, New York City; for duty with Red Cross Ambulance Company No. 34, Lieut. Albert T. Murphy, New York City.
To Camp Gordon, 22d Division National Guard, for duty, Lieut. C. G. Giddings, New York City.
To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieuts. Percy H. Finch, Broadalbin; Mortimer H. Linden, Brooklyn; Edward J. Abbott, Fonda; Joseph Leo and Charles A. White, New York City.
To Camp Greene, Charlotte, N. C., 41st Division, to examine for tuberculosis, Lieut. H. Elwyn, New York City.
To Camp Hancock, Augusta, Ga., for duty as chief of the medical service, Major F. J. Barrett, New York City; for duty, Lieut. W. L. Weeden, Clifton Springs.
To Camp McClellan, Ala., for duty, Lieut. E. L. Herget, Brooklyn.
To Camp Meade, Annapolis Junction, Md., 79th Division, for duty, Capt. H. V. DeV. Cornwell, New York City.
To Camp Mills, Garden City, L. I., for the purpose of making examination in his specialty, after completion to return to the inactive list of the Medical Reserve Corps, Capt. John F. W. Meagher, Brooklyn; for duty, Capt. M. J. Karpas and Lieut. Leiser Grimberg, New York City.
To Camp Sevier, Greenville, S. C., and report in person to the commanding general of the camp and to the commanding officer of the base hospital, for duty, Lieut. George F. Gracey, New York City.
To Camp Sherman, Chillicothe, Ohio, with Field Hospital, Major P. Van Ingen, New York City.
To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Capt. Waldo H. Sanford, New York City; Lieuts. Hubert E. Chauvin, Brentwood; Victor A. Tyraskinki, Buffalo; Lowrie W. Blake, Meyer M. Eckert, Joel Grosner, Asa L. Lincoln and Alfred A. Schwartz, New York City; Loyd W. Ballantyne and John J. Corbett, Syracuse; and Harrison Betts, Yonkers.
To Camp Wadsworth, Spartanburg, S. C., for duty, Lieut. A. A. Mendez, Brooklyn; and report to commanding general, 27th Division, Lieut. Edward N. Packard, Saranac Lake.
To Chickamauga, Ga., from duty at Camp Upton, for duty as assistant to the division surgeon, Major Richard Derby, New York City.
To Cornell Medical College, New York City, for a course of instruction in military roentgenology, Capt. Arthur J. Bendick, New York City; for duty as instfuctor in military roentgenology, Capt. Leopold Jaches, New York City.
To Fairfield, Ohio, for duty, Lieut. G. M. Clowe, Schenectady.
To Fort Ethan Allen, Va., for duty, Capt. J. D. Gulick, Schenectady.
To Fort McPherson, Ga., for duty as chief of the medical service, Lieut. Charles N. B. Camac, New York City.
To Fort Monroe, Va., for duty, Lieut. Edward D. Fraser, Brooklyn.
To Fort Niagara, N. Y., for the purpose of making examinations of the student officers in his specialty, on completion return to present station, Plattsburgh Barracks, N. Y., Major M. S. Gregory, New York City.
To Fort Oglethorpe, for instruction, from United States Army General Hospital No. 1, New York City, Capt. Leo B. Meyer, New York City; from Walter Reed General Hospital, Takoma Park, D. C., Capt. Joseph Muir, New York City; for instruction, Capt. John R. Bradley, Rochester; Lieuts. Ernest L. Wilson, Bolton Landing; Herbert S. DuCret, Carl Kaplan, James F. X. Looram, Benjamin C. Russum and James E. Weatherford, Brooklyn; Harold W. Culbertson, Buffalo;

Theron B. Bond, Cuba; Cyril Barnert, Ralph L. Cudlipp, Beeckman J. Delatour, Henry R. Kutil, and William A. Somerville, New York City; from Camp Upton, L. I., Lieut. Thomas R. Barry, Ossing; from Syracuse, N. Y., Lieut. Reginald Ducat, New Rochelle.

To Fort Ontario, N. Y., for duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Capt. D. C. Wiggin, Staten Island, and Lieut. T. G. Tousey, Rochester.

To Fort Sheridan, Ill., from Fort Benjamin Harrison Recruit Depot at Columbus Barracks, Ohio, for making a medical survey of the troops in his specialty, and on completion of this duty to return to the inactive list of the M. R. C., Major Joseph Collins, New York City.

To Fort Slocum, N. Y., for duty, Capt. William H. Luckett, New York City; Lieut. J. L. Hemstead, Albany; for duty, from Fort Michie, N. Y., Lieut. Abraham Ginsburg, New York City.

To Garden City, L. I., for duty, Capt. C. S. Cole, New York City; Lieuts. W. G. Berlucci, Brooklyn; P. J. Barone, Buffalo; A. P. Dellett and W. H. Ordway, New York City.

To Neurological School, University of Pennsylvania, Philadelphia, for four weeks of intensive training in brain surgery, Lieut. F. J. Garlick, Rochester.

To New York, N. Y., U. S. Army General Hospital No. 1, for duty, Capt. James W. Decker, New York City; and report in person to the commanding officer, Lieut. Edwin G. Ramsdell, White Plains.

To Rockefeller Institute, New York City, from Army Medical School, for duty in connection with infectious diseases at Camp Mills, Lieut. Raymond Sanderson, Poughkeepsie.

To U. S. Army General Hospital No. 1, Williams Bridge, N. Y., for duty with Base Hospital No. 3, Lieut. E. Bleier, New York City.

To Vicksburg, Miss., from Fort Oglethorpe, for duty as sanitary inspector of the national military reunion, Major John T. Sprague, St. George.

To Walter Reed General Hospital, Takoma Park, D. C., for instruction in tuberculosis examinatons, Lieut. Ephraim Goldman, New York City.

To Washington, D. C., for duty in Surgeon-General's office, Major Raymond P. Sullivan, Brooklyn; for duty with the venereal disease section, division of infectious diseases, from Fort Benjamin Harrison, Major Edward L. Keyes, Forest Hills; in connection with the organization of a mobile surgical unit, Capt. Percy R. Turnure, New York City; as surgeon-in-chief of the special fracture hospital about to be organized, Capt. J. B. Walker, New York City.

To Wrightstown, N. J., for duty, Lieut. T. A. Smith, New York City.

To Yaphank, N. Y., 77th Division, in charge of ophthalmia division, section of surgery of the head, Capt. F. G. Ritchie, New York City.

Honorably discharged, Lieut. Donald E. McKenna, Brooklyn.

Honorably discharged (on account of his inaptitude for the service), Lieut. E. Cochrane, Valatie.

To return to the inactive list of the Medical Reserve Corps, from Fort Riley, Lieut. Daniel J. Hoyt, New York City.

NORTH CAROLINA

To Army Medical School, for duty in the bacteriologic laboratory, Lieut. Hickman Ray, Rocky Mount.

To Camp Greenleaf, Fort Oglethorpe, Ga., for duty, Lieut. N. B. Adams, Murphy.

To Chickamauga Park, Ga., for duty with Field Hospital Section, Sanitary Train, Lieuts. H. Webb, Chapel Hill; for duty with Ambulance Section, Sanitary Corps, Newton G. Wilson, Summerfield.

To Detroit, Mich., for duty with Base Hospital No. 36, Lieut. A. J. Warren, Hillsboro.

To Fort Des Moines, Ia., for instruction, Lieut. Thomas W. Haywood, Raleigh.

To Fort Oglethorpe, for instruction, Major A. G. Brenizer, Jr., Charlotte; Capt. Sylvester D. Craig, Winston-Salem; Lieuts. Frank Lowe Mock, Lexington; Leaman Baggett, Taylor.

Letter of Sept. 11, 1917 (No. 3733), be modified so as to relieve Lieut. Percival R. Bennett, Bryson City, from duty at the Medical Officers' Training Camp, Camp Greenleaf, Fort Oglethorpe, Ga., and to proceed to his home.

NORTH DAKOTA

To Camp Cody, Deming, N. M., 34th Division, for duty, from Fort Riley, Lieut. Wayne P. O'Brien, Egeland.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Lieuts. Judd H. Kirkham, Langdon; William Ginsberg, Omemee.

To Camp Hancock, Augusta, Ga., division of ophthalmology, section of surgery of the head, Lieut. S. G. Larrabee, Mandan.

OHIO

To Belleville, Ill., Signal Corps, Aviation School, Lieut. C. O. Bayless, Dayton.

To Boston, Mass., for a course of instruction in orthopedic work, and on completion of this course to proceed to Post-Graduate Hospital, New York, N. Y., Lieuts. Alvah S. McClain, Lakewood; George B. Booth, Toledo.

To Camp Custer, Mich., for duty, Capt. D. Marine, Cleveland.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Capt. William F. Dager, Lorain.

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Capts. Frank J. Owry, Cincinnati; Henry M. Osborne, Youngstown; Lieuts. William H. Ambrose, New Petersburg; Kromer C. Ice, Shreve.

To Camp Sevier, S. C., for duty, Lieut. E. R. Shaffer, Columbus.

To Camp Sheridan, Montgomery, Ala., with 10th Regiment, Ohio National Guard, Lieut. W. H. Keenan, Coshocton.

To Camp Sherman, Chillicothe, Ohio, for duty in the division of otolaryngology, section of the head, Lieut. C. H. Weintz, Cincinnati.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Capts. Orr A. Dickson, Jefferson; James B. Dougherty, New Berlin; Lieuts. William O. Phillips, Centerburg; Samuel D. Edelman, Columbus; Charles H. Bailey, East Liverpool; Ralph B. Tate, Harrison; Julius R. Bolles, Holgate; Jacob M. Heyde, Loudonville; Wayne P. Mecklem, Mansfield.

To Camp Travis, Fort Sam Houston, Tex., from Fort Benjamin Harrison, for duty, Lieut. Henry A. Schlink, Cleveland.

To Camp Wadsworth, Spartanburg, S. C., for duty in connection with the division of ophthalmology, section of surgery of the head, Lieut. William M. Hinkle, Degraff.

To Camp Wheeler, Macon, Ga., for duty, Capt. A. M. Painter, Youngstown.

To Fort Benjamin Harrison, for instruction, Lieut. Burt A. Marquard, Dover.

To Fort Meyer, Va., for duty with the 12th Field Artillery, Lieut. Harry R. Carroll, Cincinnati.

To Fort Oglethorpe, for instruction, Lieuts. Sidney C. Venable, Cleveland; Milton J. Longsworth, Lima; Ralph H. Zemer, Mt. Vernon; Isaac P. Seiler, Piketon; Vernon W. LeMaster, Sidney; Howard W. Williamson, Toledo; Nolan E. Leake, Van Wert.

To Hattiesburg, Miss., Camp Shelby, 38th Division, as member of a board for special tuberculosis examination, Lieut. C. Mulky, Warrensville.

To St. Elizabeth Hospital, Washington, D. C., for a course of study in their specialty, Capt. William A. Searl, Cuyahoga; Lieut. James A. Belyea, Toledo.

To Walter Reed General Hospital, Washington, D. C., for instruction in tuberculosis examining, Lieut. William H. Horr, Cleveland.

To Washington, D. C., for duty, Capt. R. R. Morrall, Youngstown. Par. 9, Special Orders No. 186, War Dept., Aug. 11, 1917, as relates to Lieut. Benjamin H. Gillespie, Akron, be modified so as to direct him to Fort Oglethorpe for instruction.

To home, from duty at Allentown, Pa., and to the inactive list of the M. R. C., Lieut. Gratian P. Whitwham, Toledo.

OKLAHOMA

To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general, 36th Division, for duty, Lieuts. Clarence R. McDonald, Broken Bow; John W. Adams, Chandler.

To Camp Doniphan, Okla., for duty, Lieut. B. T. Bitting, Enid.

To Camp MacArthur, Waco, Tex., for duty, Lieut. William G. Husband, Gould.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Edgar A. Johnson, Hugo.

To Cornell Medical College, New York, N. Y., for instruction in military roentgenology, Lieuts. John E. Heatley, Carmen; Marion M. Roland, Oklahoma City.

To Fort Des Moines, Ia., for instruction, Lieuts. Robert W. Motley, Muskogee; Jackson Smitherman, Tulsa.

To Fort Oglethorpe, for instruction, Lieuts. George A. Akers, Ada; Thomas M. Boyd, Norman; William O. Baird, Oak Hill; Lee R. Wilhite, Oklahoma; James A. Rutledge, Woodville.

To Fort Sill, Okla., for duty, Lieuts. Charles G. Sims, Healton; L. A. Milne, Lawton.

Letter, Sept. 18, 1917 (4251), as relates to Major Fred H. Clark, El Reno, is revoked.

OREGON

To Camp Lewis, American Lake, Wash., to report in person to commanding general for duty, Lieuts. Frank R. Mount, Oregon City; for duty as assistant to division surgeon, J. G. Strohm, Portland.

To Fort Oglethorpe, for instruction, Lieuts. Leonard H. Vincent, Merlin; William C. Munly, Portland.

PENNSYLVANIA

To Annapolis Junction, Md., for duty, Lieuts. I. H. Shelly, Ambler, and Jackson S. Lawrence, Philadelphia.

To Anniston, Ala., 29th Division, as member of a board for special examination of troops for tuberculosis, Lieut. H. O. Mateer, Pittsburgh.

To Buffalo, N. Y., and Toronto, Canada, investigation and report on the manufacture of artificial limbs, and on completion of this duty to return to his proper station, Major David Silver, Pittsburgh.

To Camp Cody, Deming, N. M., 34th Division, for duty, Lieut. William J. Balley, Connellsville.

To Camp Dix, Wrightstown, N. J., 78th Division, for duty as assistant to the division surgeon, Major George M. Piersol, Philadelphia; for duty in the cantonment laboratory, Lieut. Charles W. Luders, Cynwyd; from Fort Slocum, N. Y., for duty, Lieut. John A. Roddy, Jr., Philadelphia.

To Camp Funston, Fort Riley, Kan., from Walter Reed General Hospital, Tacoma Park, D. C., for duty as tuberculosis specialist and assistant to the Army Medical Staff, Lieut. Richard Bew, Gettysburg.

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Capt. Lewis R. Tryon, Centerport, and Lieut. Edgar H. Fought, Philadelphia.

To Camp Greene, Charlotte, N. C., from Fort Oglethorpe, for duty as member of board of medical officers for examination for tuberculosis, Lieut. James M. McNall, Wilkinsburg.

To Camp Jackson, Columbia, S. C., for duty, Lieuts. E. T. Davies, Old Forge; W. Van Korb, Philadelphia; and P. H. Gerhardt, Reading.

To Camp Pike, Little Rock, Ark., 87th Division, from Fort Oglethorpe, for duty as assistant to the division surgeon, Lieut. Russell R. Jones, Lansford.

To Camp Sevier, Greenville, S. C., and report in person to the commanding general of the camp and the commanding officer of the base hospital for duty, Major G. M. Coates, Philadelphia, Pa.; from Walter Reed General Hospital, Tacoma Park, D. C., for duty as a member of the tuberculosis examining board, Lieut. Norman R. Graham, Sharksburg.

To Camp Sherman, Chillicothe, Ohio, 63d Division, as tuberculosis specialist and assistant to the Army Medical Staff, Capt. S. M. Rinehart, Pittsburg; 83d Division, for duty, Lieut. L. F. Wilson, New Kensington.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Capt. Joseph D. Farrar, Philadelphia.

To Camp Wadsworth, S. C., in charge of the division of otolaryngology, section of surgery of the head, Lieut. W. P. Barndollar, Pittsburgh.

To Chickamauga Park, Ga., for duty with headquarters Military Police, from Fort Oglethorpe, Lieut. Hugh M. Shannon, Philadelphia.

To Fort Des Moines, Ia., for instruction, Lieut. Preston M. Edwards, Philadelphia.

To Fort McPherson, Ga., from Camp Jackson, S. C., for duty as Chief of the Surgical Service, Capt. William W. Babcock, Philadelphia.

To Fort Oglethorpe for instruction, Capt. David Dale, Bellefonte; Lieuts. John E. Struthers, Danville; Marshall G. Rumbaugh, Kingston; Samuel B. Lyons, Pittsburgh; Alfred L. Rhoads, Scranton; Francis E. Donnelly, Wilkes-Barre; as instructor in gas defense, Lieut. G. Smith, York.

To Fort Thomas, Ky., for duty, Lieut. E. L. Dickey, Oil City.

To Greenville, S. C., for duty as assistant in the care of cardiovascular cases, Lieut. Truman S. Schnabel, Philadelphia.

To Middletown, Pa., from Fort Oglethorpe, 113th Aero Supply Squadron, Lieut. William P. McIntosch, Philadelphia.

To New York, N. Y., U. S. Army General Hospital No. 1, for duty, Lieut. J. J. Caffrey, Philadelphia; with the additional personnel of Base Hospital No. 2, Lieut. T. W. Cook, Osterburg.

To Philadelphia, Pa., for the purpose of compiling a hand book in ophthalmology, and on completion of this duty to proceed to Washington, D. C., for duty in the division of ophthalmology, section of surgery of the head, Major George E. de Schweinitz, Philadelphia.

To St. Elizabeth's Hospital, Washington, D. C., for a course in instruction in his specialty, Lieut. Emory L. Dravo, Warren; from Fort Ethan Allen, Vermont, for a course of study in his specialty, Lieut. E. Leslie, Pittsburgh.

To Syracuse, N. Y., Reorganization Camp, from Camp Robinson, Sparta, Wis., for the purpose of examining troops in his specialty, Lieut. Ralph L. Hill, Woodville.

To Washington, D. C., for duty, Major C. A. E. Codman, Philadelphia.

To Wrightstown, N. J., for duty, 78th Div., Lieut. C. A. O'Reilly, Philadelphia.

To Yaphank, N. Y., 77th Div., N. G., for duty, Lieut. J. F. Herbert, Philadelphia.

Par. 260, Special Orders No. 203, War Dept., Aug. 31, 1917, be modified to read for duty at the Base Hospital, Fort Oglethorpe, Lieut. Joseph M. Kenworthy, Philadelphia.

To his home from duty at Fort Niagara, N. Y., and return to the inactive list of the Medical Reserve Corps, Lieut. Augustus A. Eshner, Philadelphia.

To his home from Camp Meade, Md., on account of being physically disqualified for active service, Lieut. Clarence W. Judd, Philadelphia.

PORTO RICO

To Fort Oglethorpe, for instruction, Lieut. William R. Balbreath, San Juan.

RHODE ISLAND

To Camp Beauregard, La., for duty, Capt. R. S. Wilcox, Providence.

To Camp Kearny, Calif., for duty, Lieut. C. R. Doten, Providence.

To home, from duty at Fort Benjamin Harrison, on account of being physically disqualified, Lieut. Michael H. Scanlon, Westerly.

SOUTH CAROLINA

To Camp Greene, Charlotte, N. C., 41st Div., National Guard, in connection with venereal diseases, Lieut. C. F. Ross, Anderson.

To Camp Greenleaf, Fort Oglethorpe, Ga., for duty, Lieut. A. T. Baird, Darlington.

To Camp Jackson, Columbia, S. C., for duty, Lieuts. E. W. Barron, Manning; J. H. Pratt, Ninety Six.

SOUTH DAKOTA

To Camp Bowie, Fort Worth, Texas, from Fort Riley, and report to Commanding General, 36th Div., for duty, Lieut. Glenn V. Sigler, Highmore.

To Camp Cody, Deming, N. M., from Fort Riley, for duty, Lieut. Frederick O. Kaps, Britton.

TENNESSEE

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Charles H. Davis, Knoxville.

To Fort Des Moines, Iowa, for instruction, Lieut. Benjamin F. Davis, Columbia.

To Fort Oglethorpe, for instruction, Capt. James Brew, Jr., Nashville; Lieuts. George E. Wilson, Cardiff; Guy McL. Reeser, Church Hill; John S. Miller, Collierville; Russell B. Wilson, Gates; Claude A. Frazier, Knoxville; James S. Skaggs, Maynardville; Charles C. King, Arthur R. Porter, Jr., Memphis; Emmett E. Brown, Nashville; Joe B. Wright, Pulaski.

To Fort Thomas, Ky., for duty, Lieut. T. B. Collins, Trezevant.

To Fort Worth, Texas, Signal Corps Aviation School, now being established, Lieut. S. W. Williams, Gassaway.

To Provisional Base Hospital, from Fort Oglethorpe, for duty, Capt. William G. Somerville, Memphis.

Par. 147, Special Orders No. 192, War Dept., Aug. 19, 1917, relating to Capt. William G. Somerville, Memphis, revoked.

TEXAS

To Camp Bowie, Fort Worth Texas, for duty, Lieut. C. P. Schenck, Waco.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Lieut. Robert T. Jones, Bogata.

To Camp Greenleaf, Fort Oglethorpe, Ga., for duty, Capt. J. V. Blake, Floresville.

To Camp MacArthur, Waco, Texas, for duty, Lieuts. John Norris, Dallas; Harold E. Nicholson, Mobeetie.

To Camp Sherman, Chillicothe, Ohio, for duty as commanding officer of the Base Hospital, Major Edward G. Huber, Fort Bliss.

To Fort Des Moines, Iowa, for instruction, Lieut. Thomas N. Harris, Pilot Point.

To Fort Leavenworth, Kans., for temporary duty in Department Laboratory, Lieut. Sullivan R. Jones, Waco.

To Fort Oglethorpe, for instruction, Lieuts. Elmore B. Gilbert, Gorman; William J. Kesterson, Groom; Karl Chambers, Jasper; John M. Venable, San Antonio; Thomas R. Sealy, Santa Anna; William E. Burk, Sweet Water; Ebner H. Inmon, Lewis E. Turrentine, Tahoka; from Southern Department, Capt. Claude W. Cummings, El Paso; Lieut. Cranz Nichols, Maxwell.

To report by wire to the Commanding General, Southern Department, for assignment to duty, Lieut. Edwin T. Morris, Delvalle.

To San Antonio, Texas, for duty, Lieut. D. S. Edwards, San Antonio.

UTAH

To Camp Beauregard, Alexandria, La., from Fort Douglas, Utah, for duty as assistant in the care of cardiovascular cases, Lieut. Francis C. Tyng, Salt Lake City.

To Fort Douglas, Utah, for duty, Lieut. G. W. Clarke, Springville.

To Fort Logan, Colo., with 1st Colorado Inf., Lieut. B. W. Black, Grantville, Utah.

To Fort Oglethorpe, for instruction, Lieut. George E. McBride, Magna.

VERMONT

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Charles E. Libbey, Danville.

To Fort Ethan Allen, Vt., for duty, Lieut. G. A. Russell, Arlington.

To Fort Ontario, N. Y., duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Lieut. V. P. Genge, Newport.

VIRGINIA

To Camp Jackson, Columbia, S. C., for duty, Lieut. S. W. Woodhouse, Virginia Beach.

To Camp Lee, Petersburg, Va., for duty, Capts. S. B. Moore, Alexandria; E. M. Parker, Emporia; J. W. Hope, Hampton; Lieuts. C. M. Easter, Chincoteague Island; P. C. Riley, Markham; I. H. Goldman, Richmond.

To Camp Mills, N. Y., with First Oregon Field Hospital, Lieut. J. N. Elder, Hopewell.

To Chickamauga Park, Ga., Ambulance Section, Sanitary Corps, from Fort Oglethorpe for duty, Lieut. James C. Motley, Abingdon.

To Fort Des Moines, Iowa, for instruction, Lieut. William A. Harris, Spotsylvania.

To Fort Oglethorpe, for duty, Lieuts. Maurice A. Selinger, City Point; for instruction, James B. Anderson, Richmond.

To Newport News, Va., for duty with Three Hundred and First Regiment, Lieuts. Hubert L. Wyatt, City Point; with Three Hundred and Second Regiment, W. C. Caudill, Pearisburg; J. T. Shelburne, Petersburg.

To home, from duty at Rockefeller Institute, New York, Capt. Lomax Gwathmey, Norfolk.

Letter, Aug. 6, 1917, No. 1760, War Department, as relates to Lieut. James B. Anderson, Richmond, is revoked.

WASHINGTON

To Camp Custer, Battle Creek, Mich., for duty, Lieut. J. M. Henderson, Seattle.

To Camp Lewis, American Lake, Wash., for duty, Capt. William G. Cassels, Lieuts. A. H. Peacock, Seattle; Frederick T. Hyde, Port Angeles.

To Fort Oglethorpe from Fort Lawton, Wash., for instruction, Lieut. Charles R. Glenn, Kelso.

To Fort Ontario, N. Y., duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Lieut. R. C. Hill, Irondale.

To Lake Charles, La., Aviation School, now being established, Lieut. R. A. Allen, Tacoma.

To Los Angeles, Calif., for duty, Lieuts. Roy C. Baumgarten, Seattle; for course of instruction in military roentgenology, Burton E. Paul, Tacoma.

WEST VIRGINIA

To Camp Sherman, Chillicothe, Ohio, for duty, from Camp Lee, Petersburg, Va., Capt. Rawley H. Powell, Elkins.

To Chickamauga Park, Ga., for duty with Headquarters Military Police, from Fort Oglethorpe, Capt. John S. Shaffer, Cannelton.

To Fort Ethan Allen, Vt., for duty, Lieut. H. D. Law, Conings.

To Fort Oglethorpe, from Army Medical School, for instruction, Lieut. William Nelson, Hansford.

To Fort Ontario, N. Y., duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Lieut. L. Huth, Follansbee.

To Newport News, Va., with Three Hundred and Second Regiment, Lieut. A. C. Lambert, S. Charlestown.

A leave of absence from duty at Charleston, of ten days, commencing Oct. 18, 1917, granted to Major John E. Cannaday, Charleston.

WISCONSIN

To Camp Bowie, Fort Worth, Texas, from Fort Riley, and report to Commanding General Thirty-sixth Division for duty, Lieuts. Sylvester J. Driessel, Barton; Henry B. Beeson, Cornell; Frank O. Bruckhorst, Kewaunee; Edgar B. Elvis, Medford; John C. Johnson, Ogdensburg; Herbert T. Barnes, Pewaukee; Edgar W. Bedford, Sheboygan; George L. Converse, Webster.

To Camp Doty, Deming, N. M., from Fort Riley, for duty, Lieuts. Marlin C. Crane, Osseo; Harry A. Keenan, Stoughton; Neal S. Simons, Taylor.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Capts. Clarendon J. Combs, Oshkosh; Frederick C. Huff, Sturgeon Bay; Lieuts. Albert A. Axley, Butternut; Frank J. Hager, Denmark; Royal C. Rodecker, Holcombe; Harry J. Burne, Hudson.

To Camp Jackson, Columbia, S. C., for duty, Major N. M. Black, Milwaukee.

To Camp Sheridan, Montgomery, Ala., from Fort Benjamin Harrison, for duty as member of tuberculosis examining board, Lieuts. Harry C. Mix, Green Bay; Michael R. Wilkinson, Oconomowoc.

To Camp Travis, Fort Sam Houston, Texas, from Fort Benjamin Harrison, Ninetieth Division, for duty as tuberculosis specialist and assistant to the Army Medical Staff, Lieut. Herman H. Bassler, Oshkosh.

To Fort Benjamin Harrison, for instruction in tuberculosis examination, Lieut. Adelard E. Gendron, River Falls.

To Fort Oglethorpe, for instruction, Lieuts. Cornelius J. Corcoran, Harry B. Podlasky, Milwaukee; Charles A. Dawson, River Falls; Orlando P. Schoofs, Wauwatosa.

WYOMING

To Fort Ontario, N. Y., duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Lieut. W. S. Bennett, Cody.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Sherman T. White, Redding, county physician of Shasta County, sustained a fracture of the patella when his automobile collided with another machine, September 17.——Drs. Clayton G. Stadfield and Byron Stuckey, assistant surgeons at the Receiving Hospital, Los Angeles, have resigned to enter military service, and have been succeeded by Drs. Elmer L. Biggs and John W. Crossan.——Dr. Karl L. Dieterle has been appointed surgeon at the Receiving Hospital, Los Angeles.

Medical Research Society Organized.—A clinical society to further medical and surgical research was organized in the San Francisco Hospital, September 26, and the following officers were elected: president, Dr. Robert A. Jones; vice president, Dr. H. J. Pruett; secretary, Dr. Maurice Heppner, and treasurer, Dr. Robert A. Powers.

Tuberculosis Society Moves.—The Los Angeles Society for the Study and Prevention of Tuberculosis has moved its office from Normal Hill Center to 538 Chamber of Commerce Building.

Faculty Members in Active Service.—Among the members of the faculty of the University of California Medical School who have been called into active service in the Medical Officers Reserve Corps are Dr. Herbert C. Moffitt, San Francisco, professor of medicine and dean of the medical school, who has been commissioned major, and stationed at the Army Hospital at San Antonio, Texas; Dr. Eugene S. Kilgore, who has been commissioned major, and is stationed at the Presidio in San Francisco; Dr. Alanson Weeks, instructor in surgery, commissioned major; Dr. Howard E. Ruggles, assistant clinical professor of roentgenology, and Dr. Jule B. Frankenheimer, instructor in medicine, commissioned captains; and Drs. Elbridge J. Best, Frank P. Brendel, Arthur C. Gibson, Charles L. Tranter and Daniel W. Sooy, commissioned first lieutenants.

COLORADO

Personal.—Dr. John L. Schwer, Pueblo, is ill with typhoid fever in St. Mary's Hospital.——Dr. William E. Stemen, Denver, has been appointed chief surgeon of the National Guard, Colorado Springs, succeeding Major William A. Jolly, Boulder, who has been appointed assistant to the chief surgeon, Camp Kearny, Linda Vista, Calif.

State Society Meeting.—The forty-seventh annual meeting of the Colorado State Medical Society was held in Colorado Springs, September 25 to 27, under the presidency of Dr. Alexander C. Magruder, Colorado Springs, and the following officers were elected: president, Dr. Edward Jackson, Denver; vice presidents, Drs. Peter O. Hanford, Colorado Springs; John H. Bush, Sterling; Byron B. Blotz, Rocky Ford, and Charles Trueblood, Monte Vista; secretary, Dr. Crum Epler, Pueblo (reelected for the third term); treasurer, Dr. William A. Sedwick, Denver; delegate to the American Medical Association, Dr. Lewis H. McKinnie, Colorado Springs, and alternate, Dr. Melville Black, Denver. Estes Park was decided on as the place of the next annual meeting. A resolution was adopted to give financial support, when needed, to the families of all members of the association in war service. One hundred and forty members of the society are at present in the Medical Corps or Medical Reserve Corps of the Army.

DISTRICT OF COLUMBIA

Building Commandeered for Medical Department.—The Premier apartment house, 1718 Eighteenth Street N.W., Washington, is reported to have been commandeered by the United States government for the use of the Medical Department of the Army.

Hospital to Move.—The Washington Eye, Ear, Nose and Throat Hospital will move into its new building at 2517 Pennsylvania Avenue, October 17. The new building is four stories in height, fireproof, and occupies a frontage of 56 feet. The completion of the hospital is largely due to the efforts and contribution of Dr. Oscar Wilkinson.

Medical Society Centennial.—The Medical Society of the District of Columbia will celebrate its one hundredth anniversary, October 17. Exercises will be held in the hall of the National Museum, and a banquet will be given at the Raleigh in the evening. The society, which was organized in 1817, with an initial membership of sixteen, has now more than 600 members.

ILLINOIS

Conference of Charities and Corrections.—The State Conference of Charities and Corrections will be held in Joliet, October 26 to 28.——The Charity Organization Confederation and the State Probation Officers' Association will meet on October 25, and the State Association of County Home superintendents, October 25 and 26, in the same city.

Personal.—Dr. Fred M. F. Meixner has been appointed medical director of the new Peoria Municipal Tuberculosis Sanatorium, and assumed his duties, October 1. The building under construction will be finished about March 1, and in the meantime patients will be cared for in the pavilions now open on the grounds.——Dr. Marguerite G. Squires, Carrollton, has been appointed county physician of Grundy County.——Dr. Hiram J. Smith, assistant superintendent of the Ann State Hospital, has been appointed superintendent of the Illinois Charitable Eye and Ear Infirmary, Chicago, succeeding Dr. James L. O'Connor.

Chicago

Glanders Case Found.—A case of glanders is said to be under treatment and in strict quarantine in St. Luke's Hospital. The disease is presumed to have had its source in the barns of an express company where five horses suffered from the disease.

Provident Hospital in Need.—An urgent appeal to raise $15,000 has been made by the trustees of the Provident Hospital, which was founded in 1896 for the care of colored sick and injured in Chicago. On account of shortage of funds the free dispensary of the institution has been forced to close its doors.

IOWA

Open-Air School in Sioux City.—The board of supervisors of Woodbury County have approved the establishment of an open-air school on the roof of the new court house, for the accommodation of tuberculous and anemic children.

Personal.—Dr. David W. Reed, Clearfield, suffered a fracture of a rib, September 20, as a result of the overturning of his automobile.——Major David S. Fairchild, Jr., M. C., Iowa N. G., Clinton, has been transferred to the military service of the United States, and has been assigned to duty with the Forty-Second Division.

County Clinics on Tuberculosis.—A. E. Kepford, state lecturer on tuberculosis and director of Red Cross work in Iowa, has planned tuberculosis clinics in every county of the state, to be held by the county medical society. The first clinic was held at Clarion, September 21. With these clinics it is expected to accomplish the stamping out of tuberculosis by early diagnosis, the arousing of the people to the perils of the disease, and the stirring up of interest among the medical profession.

Hospital Items.—The Cottage Hospital, Albia, has been discontinued on account of the difficulty in obtaining help.——Dr. Carl E. Conn, Sioux City, has purchased the Denison Hospital and Sanatorium at a price stated to have been $7,000.——The John MacDonald Hospital, Monticello, was formally opened to the public, September 6. The hospital is three stories in height, of brick and stone construction, and has the most complete and up-to-date equipment.——The new State Hospital for Epileptics, at Woodward, is completed and in active operation.

KANSAS

Typhoid.—Between fifty and sixty cases of typhoid fever were reported in and around El Dorado during the first two weeks of September. The county health officer urges the boiling of water, the abolition of flies, the covering of food, and the like.

Personal.—Dr. Samuel A. Matthews, professor of physiology and experimental pharmacology in the University of Kansas, Topeka and Lawrence, has accepted the similar chair in the University of Alabama, Mobile.——Dr. Stewart McKee has been appointed city physician of Leavenworth, succeeding Capt. Charles McKee, who is at Fort Riley in the military service.——Dr. Thomas A. O'Connor, Topeka, has been appointed county physician of Shawnee County, to fill the unexpired term of Dr. C. C. Lowe, called to the colors.——Dr. Matthew R. Mitchell, North Topeka, has given up his office and moved to Florida.

MARYLAND

Epidemic of Scarlet Fever.—An epidemic of scarlet fever is prevalent in Federalsburg. Several families are quarantined as a result of the outbreak, and the county health officers are using every precaution to stamp out the disease.

Child Welfare Unit for France.—The child welfare unit to be sent abroad by the American Red Cross, in charge of Dr. J. H. Mason Knox, will leave for France about October 13. Dr. James L. Gamble, assistant in pediatrics at the Harriet Lane Hospital for Children, a part of the Johns Hopkins Hospital, will accompay Dr. Knox.

Typhoid Fever Outbreak.—Typhoid fever has broken out at the Maryland School for Boys, an industrial institution at Loch Raven. At present there are thirteen cases under treatment. The state board of health is conducting an investigation to ascertain the cause of the outbreak and has provided antitoxin to inoculate all the school. The outbreak is thought to be due to a typhoid carrier.

Medical Men Assigned to Regiment.—The men who will form the Medical Corps attached to the 115th (Maryland's Own) Regiment, now stationed at Anniston, Ala., have been selected from the three old regiments and are under the command of Major Frederick H. Vinup. His staff is composed of Capt. William J. Coleman, former superintendent of the University Hospital, Baltimore; Lieuts. Dwight H. Mohr, Roscoe Hannigan, Daniel Woodruff, J. K. Richards and Daniel Hutton. Under their command will be an enlisted personnel of forty-eight men, thirty-three of whom will be selected from the Fifth Regiment and the rest from the First.

Health Department Report.—According to a report made by the health department for September, 147 babies under 2 years of age died in Baltimore from intestinal troubles. Ninety-three babies died in September last year. The increase is said to be due to atmospheric conditions rather than to outbreaks of diseases usually fatal to infants in summer and early autumn. Deaths in the city last month from all causes totaled 869, compared with 750 in 1916; 704 in 1915, and 771 in 1914. Diseases were fatal in the following number of cases: typhoid fever, 15; measles, 4; grip, 2; cancer, 54; tuberculosis, 104; apoplexy, 52; heart disease, 79; bronchitis, 7; pneumonia, 57; Bright's disease, 63; meningitis, 1. There were 1,242 births reported.

MISSOURI

Sanatorium To Be Closed.—Dr. William H. Coon, health director of Kansas City, proposes to close the Leeds Tuberculosis Hospital, concentrating the antituberculosis work in the General Hospital, with a downtown clinic to be established for this work.

Personal.—Major Charles E. Wilson, Kansas City, surgeon of the Second Missouri Field Artillery, and formerly fire department surgeon, was presented with a handsome wrist watch and a pair of field glasses, September 8. The gift came from 375 city firemen.——The Civil Service Board of Kansas City, August 29, waived the ruling requiring a civil service examination and residence in the city for three years, in the case of Dr. Elliott Washburn, the new manager for the hospital division of the board of health.——The Board of Health of St. Joseph, at its meeting, August 30, released Dr. John L. Cox as surgeon, and appointed Dr. V. R. Wilson his successor.

Honor to Fitzsimmons.—The first meeting of the Jackson County Medical Society after the summer vacation was held in Kansas City, September 18. A military program was given, at which Col. William N. Bispham, M. C., U. S. Army, Fort Riley, Texas; Lindsay S. Milne, director of the ambulance company at the same post, and Capt. W. M. McBride of Camp Funston spoke. Resolutions were adopted on the death of Lieut. William T. Fitzsimmons, Kansas City, the first American officer to be killed in France.——In the United States House of Representatives, Representative Borland of Missouri introduced a resolution ordering the War Department to promote the late Lieutenant Fitzsimmons to a captaincy.

NEW JERSEY

Antituberculosis Clinic Grows.—The clinic of the Middlesex County Anti-Tuberculosis League which is held weekly at the Perth Amboy Hospital and at the rooms of the board of health, New Brunswick, is gradually increasing. The freeholders have recently purchased 208 acres of land near Metuchen on which to erect a county tuberculosis sanatorium.

Personal.—Dr. Louis Shalet has resigned as superintendent of the Montefiore Home and County Sanatorium, Bedford Hills, and will practice in West New York.——Lieut.-Col. William G. Schauffler, Lakewood, chief surgeon of the New Jersey National Guard, has been appointed assistant surgeon at Camp Beauregard, Louisiana.——Dr. William S. Jones, Camden, has been appointed a member of the board of managers of the Glen Gardner Tuberculosis Sanatorium, succeeding Dr. William H. Kinsinger, Camden.

NEBRASKA

Hospital Changes Hands.—The Wesleyan Hospital at University Place, Lincoln, has been purchased by Dr. Elbert J. Latta and other physicians, who assumed charge of the institution, September 1.

Smallpox.—September 21, twenty-four persons in eight Omaha families were reported to be ill with smallpox.——An epidemic of smallpox in Rokeby has caused quarantine of the postoffice in that place.

University of Nebraska Hospital Opened.—The University of Nebraska Hospital, located on the Medical College Campus, Lincoln, was opened for the reception of patients, September 1. The building is four stories in height, and has accommodation for 120 patients.

Furnas County Physicians Meet.—At the meeting of the Furnas County Medical Society, held in Arapahoe, August 5, Dr. Lee W. Rork, Oxford, was elected president, succeeding Dr. Fordyce H. McCabe, and Dr. John K. Muldoon, Arapahoe, was elected secretary, succeeding Dr. James M. Willis, Arapahoe. Both these officers have entered the service of the country.

Personal.—Dr. Roy A. Dodge, Omaha, has been appointed division surgeon for the Missouri Pacific Railroad system.——Dr. Ernest O. Weber, Waco, has been commissioned, by the governor as major, Medical Corps, Neb. N. G., and has been assigned to duty as medical inspector of the new National Reserve Regiment, succeeding Dr. Frank S. Nicholson, St. Paul, retired.

NEW YORK

Assistant Resident Physician Wanted.—A civil service examination for first assistant resident physician in the Iola Sanatorium for the Treatment of Tuberculosis, Monroe County, will be held in the near future; salary $1,200 a year and maintenance; applicants must be citizens of the United States, licensed physicians of New York state, graduates of an incorporated medical college, at least 21 years of age, and must have been for at least three years' residents of the state. It is desired to secure an appointee who has had experience in the institutional treatment of tuberculosis. Requests for application form should be made to the State Civil Service Commission, Albany, and applications must be filed prior to October 24.

New York City

New York Academy of Medicine.—The Wesley M. Carpenter lecture is to be delivered at the next meeting of

the New York Academy of Medicine, October 18, by Dr. William H. Mayo of Rochester, Minn. His subject will be "The Rôle of the Spleen in the Production of a Number of Obscure Clinical Phenomena."

Flower Hospital to Become Base Hospital Unit.—At a meeting of the Flower Hospital War Relief and its affiliated societies, held on October 5, Dr. Royal S. Copeland, dean of the hospital, announced that application had been made to turn the Flower Hospital into a base hospital unit and that this application would soon be granted. It was voted to increase the appropriation for medical supplies from $10,000 to $25,000 and to double the personnel of the hospital.

Red Cross Rally.—The first great Red Cross parade ever held in this country and the largest body of war nurses ever gathered together paraded Fifth Avenue on October 4. The fifty Red Cross chapters represented succeeded in giving one of the most impressive demonstrations of the scope of America's war preparations that New York has witnessed. Among those leading the parade were Major-Gen. William C. Gorgas, Rear Admiral William C. Braisted and Henry P. Davison.

The Poets' Ambulances.—The American Poets' Committee which announced some time ago that it would send 50 ambulances for General Cadorna's army now announces that it proposes to send 100 ambulances. It has already purchased 28 ambulances by cable to be put into the field immediately and has funds for the purchase of 12 more. A unit of $2,000 purchases one ambulance and a number of individuals have contributed this sum. Ambulances purchased in this way bear the name of the donor, not as a matter of pride but as a reinforcement of Italian valor.

Urge Government Control of Narcotic Drugs.—As a result of the disclosure of the extent of criminal traffic in narcotic drugs in this city the Federal Grand Jury has passed unanimous resolutions asking United States Attorney Caffey to take the matter up with the federal government. These resolutions contain recommendations urging that chemists and internal revenue inspectors be assigned to every plant where the drugs are manufactured; that the product be shipped to government warehouses in zones to be established; that the government should control the price, the quantities shipped to wholesale druggists, jobbers, dealers, retailers and pharmacies, all of whom, and manufacturers as well, should be bonded and licensed, and that the government should control exports and imports. The resolutions request that an adequate bill be prepared for presentation to Congress that will prevent the continuance of conditions such as have been brought to light by the investigations of the internal revenue inspectors in this city.

Free Clinic for Speech Defects.—In view of the fact that many American soldiers are likely to return from the front with their powers of speech impaired either as the result of wounds or of shell shock, the various branches of medicine bearing on the treatment and correction of speech defects have been coordinated in a new institution which has been incorporated under the name of the New York Clinic for Speech Defects. This clinic will be opened at 143 East Thirty-Seventh Street sometime during the month of October, with Dr. Herbert L. Wheeler as president. Among those interested in the project are Dr. Abraham Jacobi, Thomas A. Edison, Drs. John E. MacKenty, Philip D. Kerrison, George M. Parker and James Sounett Greene, who will have charge of the clinic. In addition to treating the speech defects that result from war injuries, defects inherited or acquired will be treated and those having a foreign accent which they wish to overcome will be treated as though the accent were a speech defect. The institution will be supported by private philanthropy.

High Cost of Milk Problem.—Owing to the intimate relation between the cost of milk and child welfare the health department believes that this is a matter in which it should directly concern itself. Inquiries already made and still under way among the families of the poor show that the use of milk has been decidedly restricted because of the increased price. In some places the sales of milk for family use have decreased as much as 20 per cent. The health department attributes a notable increase in the number of deaths from diarrheal disease in children under 1 year of age to this practice. As a result of the facts brought out, Commissioner Emerson has written a letter to Mayor Mitchell suggesting that the city schools, baby health stations, settlement houses, hospitals, dispensaries and police stations be used as central points for the distribution and sale of milk, bread and perhaps other staple articles of food whose cost is excessively high because of the wastefulness of present methods of distribution. At the request of the health commissioner, the mayor has appointed a committee to elicit all the facts in relation to this matter and to make constructive suggestions.

OREGON

Sanatorium Opened.—The new sanatorium of Dr. Edward A. Pierce, Portland, known as Cedar Crest Farm, is now completed and opened for patients. The building is located near the city limits of Portland, overlooking the Willamette Valley, and is two stories in height, with extensive verandas on both floors.

Personal.—Dr. J. Hunter Wells has returned to Portland and assumed practice after twenty-two years spent in the missions and mines of Corea.——Dr. John H. McVay, Hood River, who sustained serious injuries to his spine a year ago, is reported to be seriously ill in the Hood River Hospital. ——Dr. Frank M. Brooks, Portland, has been appointed a member of the state board of health, succeeding Dr. Marius B. Marcellus, who has been called to the colors.——Dr. William H. Dale, Harrisburg, has been appointed a member of the State Medical Board, to succeed Dr. Harry E. Clay, Salem, who has entered the military service.——Dr. Alvin F. Sether, Roseburg, is ill with typhoid fever.

PENNSYLVANIA

Philadelphia

Reception of Dr. Prince.—The Medical Club of Philadelphia will give a reception in honor of Dr. Morton Prince of Boston, October 19, at the Bellevue-Stratford Hotel.

Social Diseases.—At the stated meeting of the College of Physicians and Surgeons, Col. Thomas H. Goodwin made a brief address; Col. Frederick F. Russell, M. C., U. S. Army, presented a paper on "Social Diseases in the Army"; Major William F. Snow, M. C., U. S. Army, a paper on "Social Diseases in the Army as Effected by the Soldier's Environment"; Mr. George W. Braden, a paper on "The Present Site of Social Diseases." Dr. William W. Keen presented to the college the retractor used in the operation on President Grover Cleveland in 1893.

Personals.—Major George E. deSchweinitz, Medical Reserve Corps, has been assigned to active duty at Philadelphia for the purpose of compiling a handbook on ophthalmology for the use of the Surgeon-General of the Army.——Dr. Santos Fernandez, president of the Cuban Academy of Science, and one of the most distinguished eye surgeons of Cuba, was the guest of honor at a luncheon given October 2 by Dr. William Campbell Posey of the Wills Eye Hospital.——Dr. J. Torrance Rugh has been commissioned captain, M. R. C., U. S. Army, and appointed by the Surgeon-General as an instructor in orthopedics at the southern camps.

SOUTH DAKOTA

New Officers.—The annual meeting of the Lake Preston Medical Society was held at Lake Preston, October 3, the president, Dr. E. H. Grove, Arlington, in the chair. Dr. Burtis T. Green, Brookings, was elected president; Dr. Lorenzo N. Grosvenor, Huron, vice president, and Dr. John C. Baker, Ramona, secretary-treasurer.

Work on Sanatorium Commenced.—The state board of charities and corrections, having failed to secure bids for the construction of the addition to Custer Tuberculosis Sanatorium, has undertaken the carrying on of the work itself, and expects to have the most important pavilion ready for use before winter sets in.

WYOMING

Medical Society Meeting.—The Northwest Medical Society held its quarterly meeting in Worland, recently, and elected the following officers: president, Dr. Will V. Gage, Worland; vice president, Dr. Chester E. Harris, Basin, and secretary-treasurer, Dr. W. B. Mauis Powell. The next meeting will be held in Lovell, December 2.

CANADA

Personals.—Prof. John C. McLennan, Ph.D., head of the department of physics, University of Toronto, and member of the Canadian Commission on Chemical Research, is among the first group to receive the honor of the new Order of the British Empire.——The name of Col. Herbert A. Bruce, Toronto, is prominently mentioned in connection with the nomination of federal candidates for parliamentary honors in

the coming Dominion election. Dr. Bruce, who is still in France, may possibly contest the constituency of North Toronto in the Liberal-Conservative interest.

Winnipeg's Vital Statistics.—According to the report of the city assessor of Winnipeg for 1917, as set forth in the *Bulletin* of the health department, there has been a reduction in the population of over 17,000 as compared with 1916. The figures for 1917 are 182,848, and for 1916, 200,000. This decrease has been going on since 1914, and the enlistments for the war and the removal of the floating population are assigned as reasons. This had had an interesting effect on the vital statistics of the city. The births for 1917 were 2,842, as compared with 3,046 for 1916. Though this is a reduction in the actual number of births, there has been an increase in the number of births per thousand, which is accounted for by the fact that the number of mothers in the city has increased. Many families from which the soldier has gone to war have moved into the city from the surrounding country. The marriages in 1917 were 1,158, as compared with 1,482 in 1916. It is said that the marriage rate has undoubtedly decreased among those of marriageable age, but exact figures on this point are not available. It should be based on the number of single men and women of marriageable age. The substitution of families of young children in the place of adults would be expected to have had an unfavorable influence on the mortality rates, but it is noted that for the six months of 1917 the rate was 10.41, as against 11.13 for 1916. The number of deaths from disease of the respiratory system, diarrheal diseases in children under 2 years of age, tuberculosis of all forms and deaths from external causes all decreased. The mortality rate for the acute communicable diseases also shows a slight decrease. Deaths from cancer in persons over 40 show increases.

Hospital News.—An institution for the education and training of blind soldiers is to be established at Halifax, N. S. The organization work will be under the supervision of Sir Frederick Fraser, Halifax, who has been so successful in building up the Halifax School for the Blind.——The summer hotel at Qualicum, Vancouver Island, B. C., has been converted into a convalescent home for returned soldiers. The institution now holds 100 patients.——A few months ago a municipal hospital act was passed in the province of Alberta which provides that the province shall be divided into districts and that hospital boards shall be appointed to provide for the location and purchase of suitable hospital sites; the purchase, acquisition, or erection of suitable buildings, furnishings and equipment. Although the act does not compel a municipality to establish a hospital, every facility and inducement is offered for the establishment of such hospitals. The provisional government will see that money collected for this purpose shall be expended to the best advantage.——Approximately 1,500 patients admitted to the Toronto Military Base Hospital every year are afflicted with venereal diseases; and during the first three months of 1917, 12 per cent. of all patients in the public wards of the Toronto General Hospital gave a positive Wassermann reaction. Twenty-five per cent. of the male admissions to the Toronto Hospital for the Insane are cases of general paresis.——About 1,200 tuberculosis cases among returned soldiers have thus far passed through the hands of the Canadian Hospitals Commission, while over 800 are undergoing treatment.——An advisory committee on tuberculosis has been appointed to assist the Canadian Hospitals Commission. The members of that committee are Capt. John R. Byers, Ste. Agathe, Que.; Dr. Charles D. Parfitt, Gravenhurst, and Dr. Jabez H. Elliott, Toronto.

GENERAL

Prevention of Infant Mortality.—The eighth annual meeting of the American Association for the Study and Prevention of Infant Mortality will be held in Richmond, Va., October 15 to 17, under the presidency of Dr. William C. Woodward, Washington, D. C. The subjects to be discussed by the association will be, "Pediatrics; Obstetrics, Propaganda; Vital and Social Statistics; Rural Communities; Nursing and Social Work, Eugenics, and Public School Education for the Prevention of Infant Mortality.

Social Hygienists to Meet.—The annual meeting of the American Social Hygiene Association will be held at the Belvedere Hotel, Baltimore, October 19, for the election of officers and directors, and to consider further mergers with social hygiene societies and other agencies. A program of public meetings and conferences has been arranged jointly with the American Health Association for October 18, and on the morning of October 19, and in Baltimore with the Baltimore Medical Society and the Maryland Social Hygiene Society on the afternoon and evening of that day.

District Society Meeting.—The regular fall meeting of the Iowa and Illinois Central District Medical Association was held at the Rock Island Club, Rock Island, Ill., October 11. The scientific program included illustrated lectures on "The Diagnosis of Renal Tuberculosis," by Nathaniel G. Alcock, Iowa City, Iowa, and "Recent Studies in the Etiology and Treatment of Experimental and Human Poliomyelitis," by Dr. John W. Nuzum, Chicago, and a discussion of "Some Medico-Economic Questions," by Dr. David S. Fairchild, Clinton.

National Board in Session.—The third examination of the National Board of Medical Examiners is now being conducted in the Cook County Hospital. The session this year will cover an entire week, beginning Wednesday, October 10. About sixty-five candidates are being examined. The certificates of this board are now recognized by the licensing boards of Colorado, Delaware, Idaho, Iowa, Kentucky, Maryland, New Hampshire, North Carolina, North Dakota, Pennsylvania, Rhode Island and Vermont. Several other states are contemplating similar action.

Bequests and Donations.—The following bequests and donations have recently been announced:

Methodist Episcopal Hospital, Indianapolis, $75,000, by the will of Mrs. Emma Messick, Shelbyville.

College of Physicians and Surgeons in the City of New York, a donation of $50,000 for the necessary enlargement of the medical school equipment to care for women students, by George W. Brackenridge, San Antonio, Tex.

The Martinez Anti-Tuberculosis Fund, Dallas, Tex., for the treatment and assistance of indigent persons affected with tuberculosis, a gift of $1,000 or more annually, by Mr. B. P. Martinez.

Cincinnati General Hospital, a monthly payment of $10 from the pay of O. W. Cuhn, a sailor in the United States Navy, in gratitude for treatment received at the hospital.

That Confounded Comma.—A thousand and one stories have been published regarding the havoc caused by the misplaced coma. Sometimes this havoc is amusing; sometimes it is serious; and sometimes it is between the two. The havoc caused by a misplaced comma in our columns two weeks ago comes under the last designation. Commenting on Dr. Keen's article on the operation on President Cleveland, we wrote:

"While the article is not of particular scientific or surgical importance, historically it is of decided interest."

The intelligent compositor, however, thus gave it to our readers:

"While the article is not of particular scientific or surgical importance historically, it is of decided interest."

Lane Medical Lectures.—The sixteenth course of Lane Medical Lectures at Stanford University, San Francisco, will be delivered by Dr. Simon Flexner, director of laboratories of the Rockefeller Institute for Medical Research, New York, on the evenings of October 8 to 12 inclusive in Lane Hall. The chief subject will be "Physical Basis and Present Status of Specific Serum and Drug Therapy." The titles of the separate lectures are as follows:

October 8: Epidemic Meningitis; Lobar Pneumonia; Bacillary Dysentery and Specificity in Bactericidal Sera.

October 9. Gaseous Gangrene; Shiga Bacillary Dysentery, and The Principles of Homoserum Therapy.

October 10: Poliomyelitis and the Principles of Homoserum Therapy.

October 11: Local Specific Therapy as Illustrated by the Serum Treatment of Epidemic Meningitis, Poliomyelitis and Tetanus.

October 12: Chemotherapy of the Spirochetal Infections.

Clinical Congress of Surgeons.—The meeting of the Clinical Congress of Surgeon of North America will be held in Chicago, beginning Monday, October 22, and continuing to and including Friday, October 26. The opening meeting will be held in Orchestra Hall at 8:15 p. m., October 22, at which will be delivered the addresses of the retiring president, Dr. F. B. Lund, Boston, of the incoming president, Dr. John G. Clark, of Dr. Franklin Martin, of the Advisory Committe of the Council of National Defense, and of Dr. A. J. Ochsner, chairman of the committee of arrangements. The meeting will be given a military tone by the presence of the Surgeons-General of the Army, Navy and Public Health Service, Gorgas, Braisted and Blue, Col. T. H. Goodwin, and Sir B. G. A. Moynihan of the British medical services, Col. C. Dircle, France, and Dr. George W. Crile, recently in France. The

scientific meetings of Tuesday, Wednesday, Thursday and Friday will be held in the Gold Room of the Congress Hotel. The presidential address will be given Thursday night, October 25, at 8 p. m., by President John G. Clark, his subject being, "Rădium in the Treatment of Cancer of the Uterus." The articles to be read and the discussions are expected to have a distinct military bearing. The day work of the Congress will be made up of clinics at the various hospitals.

Health in the Canal Zone.—The report of the Health Department of the Panama Canal for July, 1917, shows that the health of the population in the Zone terminal cities was good. Whooping cough was prevalent in Balboa and Gatun districts. One case of infantile paralysis occurred in the Pedro Miguel district in a child aged 3 years, without history of contact with any previous case. Two cases occurred in December, 1916, in the Balboa district, also without history of outside contact. This case of infantile paralysis was the only one of disease of quarantinable nature occurring during the month. Among the 32,587 employees of the Panama Canal and the Panama Railroad Company, there were 908 admissions to hospitals and quarters. Deaths from all causes numbered twenty-five, of which twenty-four were from disease. Diseases causing the highest admission rate to hospitals were, in the order of their numerical importance, venereal diseases, malaria, tuberculosis, organic diseases of the heart, and pneumonia. These five diseases, it is said, caused 35 per cent. of all admissions. Venereal diseases caused 14 per cent., and malaria 13 per cent. of admissions. In the civilian population of the Zone, numbering 24,038, there were thirty-five deaths, thirty of which were from disease. Of the deaths from disease, 47 per cent. occurred among children under 4 years of age. Sixty births were reported for the month. There were nine deaths among children under 1 year of age, all colored. The death rate from disease among the employees of the Zone was 8.84 per thousand, and among the civilian population 14.90 per thousand.

FOREIGN

Deaths in the Profession Abroad.—**F. A. Arango,** a prominent surgeon and obstetrician of Colombia, aged 62.—**A. da Graça Couto,** professor of ophthalmology at the University of Rio de Janeiro and director-general of the public health service, aged 53.

Marriages

Lieut. Harry Clark Hackman, M. R. C., U. S. Army, Flint, Mich., to Miss Edna J. Wheeler of Bellevue, Pa., September 15.

Raymond Rudolph Barbanell, M.D., San Francisco, to Miss Henrietta Hurwitz of Covina, Calif., in Los Angeles, September 13.

Lieut. Fletcher Barr Taylor, M. R. C., U. S. Army, to Miss Virginia Barnes of Leavenworth, Kan., September 8.

Major Kerwin Weidman Kinard, M. C., U. S. Army, to Miss Ada Lee Porter of Kansas City, Mo., October 10.

Jacob Richter Buchbinder, M.D., Chicago, to Miss Hazel H. S. Felman of Joliet, Ill., in Chicago, September 27.

John Francis Ahern, M.D., Springfield, Mass., to Miss Anna G. Byrnes of Worcester, Mass., September 17.

Homer Augustus Alexander, M.D., Topeka, Kan., to Miss Mary Helen Poage of Marshall, Mo., September 19.

John Ray Johnson, M.D., Lima, Ohio, to Miss Hallie Hawk of St. Marys, Ohio, at Monroe, Mich., August 2.

Lieut. Jacob A. Goodman, M. R. C., U. S. Army, to Miss Ida E. Ginsburg, both of Chicago, September 26.

Felix E. Baker, M.D., Stamps, Ark., to Miss Margaret Burleson of Wortham, Texas, September 9.

Francis Bonneau Johnson, M.D., to Miss Ritchie McGrann, both of Washington, D. C., September 11.

Chester Henry Keogh, M.D., Chicago, to Miss Katharine Knapp of Portland, Ore., August 9.

Joseph Florian Konapa, M.D., to Miss Marie Kasperek, both of Chicago, in August.

George D. Bowdoin, M.D., Wilmington, N. C., to Miss Christine Johnson, recently.

Deaths

Americus R. Allen, M.D., Carlisle, Pa.; University of Pennsylvania Philadelphia, 1887; aged 55; a Fellow of the American Medical Association; chief surgeon for the Cumberland Valley Railroad, and the Cumberland Valley Traction Company; a member of the staff of the Carlisle Hospital, and surgeon to Todd Hospital; died at his home, September 15, from septicemia due to an operation wound.

Arthur H. Bernstein, M.D., Scranton, Pa.; Jefferson Medical College, 1891; aged 54; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; for several years a member of the surgical staff of the Scranton State Hospital; died at his home, September 20, from cerebral hemorrhage.

Otto Saly Binswanger, M.D., Portland, Ore.; University of Maryland, Baltimore, 1882; aged 63; a Fellow of the American Medical Association; professor of organic chemistry in the University of Oregon, Portland; a member of the medical staff of St. Vincent's Hospital; a veteran of the Franco-Prussian War; died at his home, September 25.

Robert McAllister Richardson, M.D., Chattanooga, Tenn.; Chattanooga (Tenn.) Medical College, 1908; aged 33; formerly a Fellow of the American Medical Association; a member of the Tennessee State Medical Association; a specialist on diseases of the eye, ear, nose and throat; died at his home, September 18, from tuberculosis.

Lieut. George Plummer Howe, M. R. C., U. S. Army, Boston; Harvard Medical School, 1904; aged 39; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; is reported to have been killed in action, September 28, while on duty with the British forces in France.

William M. Baker, M.D., Shreveport, La.; Tulane University, New Orleans, 1874; aged 65; for many years a practitioner of Arcadia, La.; formerly a member of the Louisiana State Medical Association; for several years grand lecturer of the Grand Lodge, F. and A. M. of Louisiana; died at his home, September 24.

James Henry Elliott, M.D., West Plains, Mo.; Louisville and Hospital Medical College, Louisville, Ky., 1908; University of Louisville, Ky., 1909; aged 40; a Fellow of the American Medical Association, and president of the Howell County Medical Society; physician of Howell County; died at his home, September 24.

Peter Hughes, M.D., Brooklyn; New York University, New York City, 1879; aged 60; chief surgeon to St. Catherine's Hospital, Williamsburg, consulting surgeon to St. John's, St. Mary's and Jamaica hospitals; surgeon to the Brooklyn Ferry Company; died at his summer home, in Milford, Pa., September 30.

William Andrew Bindewald, M.D., Louisville, Ky.; University of Louisville, Ky., 1871; aged 76; formerly a Fellow of the American Medical Association; for thirty years physician to St. Joseph's Orphan Home; died in St. Joseph's Infirmary, Louisville, September 19, from disease of the stomach.

Jerome Samuel Bissell, M.D., Torrington, Conn.; Yale University, New Haven, Conn., 1894; aged 48; formerly a Fellow of the American Medical Association; a member of the Connecticut State Medical Society; died in a sanatorium in Waterbury, Conn., September 13, from nervous prostration.

Jesse Ralph Johnson, M.D., Amite, La.; Memphis Hospital Medical College, Memphis, Tenn., 1894; aged 52; formerly a Fellow of the American Medical Association; a member of the Louisiana State Medical Association; formerly coroner of Plaquemines Parish; died at his home, September 24.

Charles W. Nutting, M.D., Etna Mills, Calif.; Atlanta (Ga.) Medical College, 1876; aged 65; a Fellow of the American Medical Association, and past grand master of the F. and A. M. of California; for two years demonstrator of anatomy in his alma mater; died at his home, September 20.

Peter D. Fahrney, Hagerstown, Md. (license, Maryland); aged 74; a practitioner since 1867; formerly a clergyman of the Church of the Brethren; for more than thirty years a resident of Frederick, Md.; died at his home, September 22, from cerebral hemorrhage.

August George Horstman, M.D., Brooklyn; Cornell University, New York City, 1906; aged 39; a Fellow of the American Medical Association; formerly a member of the

staff of the German and Jewish hospitals, Brooklyn; died at his home, September 26.

William James Francis Blaney, M.D., Baltimore; University of Maryland, Baltimore, 1896; aged 44; formerly a member of the Medical and Chirurgical Faculty of Maryland; died in St. Joseph's Hospital, Baltimore, September 25, from heart disease.

Bradbury Moulton Richardson, M.D., Brooklyn; New York Homeopathic Medical College, New York City, 1865; aged 75; from 1872 to 1880 surgeon of the Forty-Seventh Infantry, N. G. S., N. Y.; died at his home, September 23, from arteriosclerosis.

Andrew John Bilhoefer, M.D., New York City; New York University, New York City, 1885; aged 55; a Fellow of the American Medical Association; medical director of the Odd Fellows' Home; died at his home, August 28, from myocarditis.

Armistead Brooks Flippin, M.D., Nashville, Tenn.; University of Nashville, Tenn., 1857; aged 77; surgeon of the Eighth Arkansas Infantry, C. S. A., throughout the Civil War; died at his home, September 21, from cerebral hemorrhage.

Fred C. Dickson, M.D., Danville, Ill.; Indiana Medical College, Indianapolis, 1906; aged 36; formerly a Fellow of the American Medical Association; died in the Glen Rest Sanitarium, near Columbus, Ohio, September 20.

Benjamin F. Fortner, M.D., Vinita, Okla.; University of Nashville, Tenn., 1872; aged 70; a Fellow of the American Medical Association; for many years local surgeon for the Frisco system; died at his home, September 24.

Edward William Buhrmaster, M.D., La Harpe, Ill.; St. Louis College of Physicians and Surgeons, 1905; aged 37; who went to Colorado on account of his health; died in Colorado Springs, September 17.

Edwin Sharp, M.D., Argenta, Ark.; Vanderbilt University, Nashville, Tenn., 1881; aged 65; formerly a member of the Arkansas Medical Society; died in a sanatorium at Hot Springs, Ark., September 25.

George M. Wells, M.D., Wayne, Pa.; University of Pennsylvania, Philadelphia, 1895; for twenty-six years a practitioner of Wayne; died at the home of his son, near Annapolis, Md., September 24.

James M. Ferguson, M.D., Colorado Springs, Colo.; Medical College of the State of Carolina, Charleston, 1859; aged 89; a pioneer of the Pikes Peak region; died in Colorado Springs, September 25.

George H. Albright, Columbiana, Ohio (license, Ohio, 1896); aged 65; a member of the Ohio State Medical Association; died in the Salem (Ohio) City Hospital, September 21, from pneumonia.

Joseph Ferdinand Lindsey, Jr., M.D., Boston; Harvard Medical School, 1877; aged 67; who retired from practice about thirty years ago; died at his home in Roxbury, September 8, from angina pectoris.

James N. Riley, M.D., Stamping Ground, Ky.; Atlanta (Ga.) Medical College, 1857; aged 90; surgeon in the Confederate service throughout the Civil War; died at his home, September 18, from uremia.

Downing Howard Young, M.D., Wakeman, Ohio; University of Wooster, Cleveland, 1871; aged 71; a veteran of the Civil War; died at his home, September 10.

Robert Irvin McQuiddy, M.D., Lawrenceburg, Ky.; Jefferson Medical College, 1854; aged 86; died at his home, June 1, from senile debility.

Wellington C. Jeffers, M.D., Lindsay, Ont.; University of Victoria College, Coburg, Ont., 1867; aged 53; died at his home, July 17.

John Swope Mathias, M.D., Kansas City, Mo.; University of Maryland, Baltimore, 1879; aged 62; died at his home, September 17.

Floyd John Hodge, M.D., Florence, Mass.; Baltimore Medical College, 1908; aged 33; died in Plainfield, Mass., August 22.

John Allen Bernard, M.D., Minneapolis; University of Minnesota, Minneapolis, 1889; aged 71; died at his home, September 16.

Logan Cox, M.D., Hallidayboro, Ill.; University of Tennessee, Nashville, 1882; aged 55; died in East St. Louis, Ill., August 9.

Hugo Kinner, M.D., St. Louis; University of Berlin, Germany, 1863; aged 77; died at his home, September 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

GONOSAN

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report on Gonosan and authorized its publication.

W. A. PUCKNER, Secretary.

Gonosan (Riedel and Company, Inc., New York City) comes in the form of capsules, each said to contain 5 minims of a mixture composed of oil of sandalwood 80 per cent., and 20 per cent. of alpha- and beta-resin of kava, isolated by a patent process. The mixture, as the name implies, is intended for the treatment of gonorrhea.

This proprietary preparation was under consideration by the Council at various times from 1905 to 1910. During this time, the Council agreed to accept the preparation if the suggestive name was changed, the therapeutic exaggerations abandoned, and the drug kava admitted to New and Nonofficial Remedies. The name was not changed, the other questions were left open, and the preparation was not accepted.

Recent and more objectionable advertising of Gonosan makes it advisable for the Council to take action and to publish a report. The tone of this advertising is reflected by the following quotation from a recent advertising circular:

"The old-established balsamic treatment of gonorrhea, for some years neglected in favor of the local injection of organic silver and other germicidal salts, has, with the increasing knowledge and attention paid to the composition and purity of the balsams, regained to a large extent the confidence formerly reposed in them.

"It may now be said that the combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy."

Any one conversant with current medical literature and practice would stamp these statements as misleading exaggerations. The balsams, oleoresins and volatile oils may have some value as minor adjuvants in the treatment of gonorrhea, but that is all. The position in this respect has not changed materially in recent years. These agents do not have a value equal to that of local treatment, as the quoted statement implies.

The claims made for Gonosan might with equal force be made for oil of santal alone. Kava kava, the other constituent, belongs to the pepper family; it had a temporary vogue some two or three decades ago but has failed to maintain a place. It has never been recognized officially. There is no scientific evidence that it has any value either alone or as an adjuvant to sandal oil. The "clinical reports" quoted in the advertising circulars, rather curiously, nearly all date back ten years or more, viz., to a period when the attitude of the profession toward proprietary remedies was less critical than it is now. It would be interesting to know whether these authors still adhere to their opinion, or whether any of them have subsequently had experiences similar to that of a correspondent who wrote:

> "Gonosan, at my hands, did not prove to be of more essential value in the treatment of gonorrhea than any other sandalwood oil preparation. The various claims made for Gonosan, that it possesses sedative and anesthetic properties, that by its continuous use the urethral discharge disappears more rapidly and that, if combined with appropriate diet and rest, it is liable to prevent complications, are, according to my experience, not corroborated by actual results."

The only experimental work quoted in support of Gonosan, that of Pohl, is not convincing. The doses that Pohl found necessary to influence experimental purulent pleurisy makes it impossible to transfer his work to the clinic. (He found a

dosage of oil of santal corresponding to an ounce per day, for man, inefficient; positive results were obtained only with 2 ounces per day.)

In order to learn the estimate placed on the therapeutic value of the "balsams," an inquiry was sent to the authors of the papers presented to the section of Genito-Urinary Diseases at the recent meeting of the American Medical Association in New York. The inquiry read:

> "*Dear Doctor:*—An advertising circular for Gonosan 'Riedel' which is now being distributed begins thus:
>
> 'The old-established balsamic treatment of gonorrhea, for some years neglected in favor of the local injection of organic silver and other germicidal salts, has, with the increasing knowledge and attention paid to the composition and purity of the balsams, regained to a large extent the confidence formerly reposed in them.'
>
> 'It may now be said that the combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy.'"
>
> "Is the statement correct that the combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy? Your reply to the above will be appreciated by the Council."

Seventeen replies were received. They bear out the position that has been outlined. Only one writer considered the statement even approximately justified, and this in the sense that "the majority of cases receive no other treatment" than a combination of local applications and systemic medication. Another stated that, "in a general way their statement is true though a trifle too sweeping," and then added that the field of the balsams is rather restricted. With the exception of these qualified endorsements the remaining (fifteen) replies characterized the statement as incorrect and misleading. The replies are a valuable contribution to the status of the "balsam" treatment of gonorrhea, and extracts of them are appended to this report.

It is recommended that the Council declare Gonosan inadmissible to New and Nonofficial Remedies, because the therapeutic claims are exaggerated (Rule 6); because there is no evidence that the combination of kava resin with oil of santal is superior to oil of santal alone (Rule 10); and because the therapeutically suggestive name is conducive of indiscriminate and unwarranted use of the preparation both by the profession and the public (Rules 4 and 8).

Appendix

The extracts from replies received to the inquiry above referred to, follow:

Dr. B., Penn., wrote:

"In my practice I have found that local injections are very valuable in the treatment of gonorrhea, but I have never found that the internal administration of natural balsamics dominated modern gonorrheal therapy; while it is an aid, I consider the quoted statement to be very erroneous."

Dr. F., D. C., wrote:

"While it is doubtless true that acute urethritis, gonorrheal, is now generally treated by local injections of solutions of organic silver salts, and that santal oil is often used, it is not true, as one would infer from the quotation, that the balsams are now considered more efficacious than they were formerly. So far as I know they have not lost or regained anything during the past dozen years in the way of confidence reposed in them. The indications for their use is very definite and very limited."

Dr. B., Ga., wrote:

". . . in recent years I have almost abandoned the use of balsams, etc., in the treatment of gonorrhea. Patients, who are properly treated otherwise, seem to get along as well without such drugs as with them, in fact apparently better for they have no gastric disturbance. It is important for patients to drink freely of water and when so doing the balsams are so diluted that I cannot conceive of their doing much good. Formerly my patients often lost weight during the treatment of gonorrhea; now, without balsams and with plenty of water, they usually gain in weight."

Dr. S., Mich., wrote:

". . . we believe that in a general way their statement is true though a trifle too sweeping. We do not ordinarily use the balsams in uncomplicated anterior urethritis. We do however, find indication for their administration in from sixty to seventy five per cent. of all cases of acute gonorrhea at some time during the course of the disease."

Dr. L., Mo., wrote:

"I would say that the statement that, 'The combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy,' is far from representing the facts. While the balsamics may occasionally have an indirect soothing effect on the mucous membranes involved, the dominant factor is local treatment, aiming at disinfection and restoration to normal of the inflamed tissues."

Dr. R., Mich., wrote:

"Regarding your request although I am willing to reply it is difficult to do so because if I should do so in the affirmative that could apply only to certain acute cases without complication of any kind and such cases are rare. In such, however, the advertiser is not far from right—since vaccine therapy has proven absolutely worthless we must fall back on antiseptics in acute urethritis when there are no objections to such treatment . . ."

Dr. K., Ill., wrote:

"I am under the impression that the internal administration of balsamics is used only when complications arise, such as acute posterior urethritis. Personally I use the balsamics very, very rarely. From my observation, however, I am led to believe that many men still use internal drugs in the treatment of gonorrhea, and during the past few years, I should say the use of hexamethylenamin has been on the increase, and the use of the balsamics on the decrease. I do not believe that hexamethylenamin is of any value in the treatment of gonorrhea, and am simply citing this as my observation of the widespread use of this drug in the treatment of gonorrhea."

Dr. T., Penn., wrote:

". . . I believe that more men use salol or hexamethylenamin, or no urinary antiseptic whatsoever, than use the balsamics."

Dr. B., Ind., wrote:

". . . The only systemic treatment that is considered necessary today is rest, plenty of water and neutralize the acidity of the urine with bicarbonate of soda or some sodium salt."

Dr. Y., Mass., wrote:

"Sandal wood oil during the acute stage of gonorrhea certainly tends to make the patient more comfortable and undoubtedly does lend some (tho I believe slight) gonococcidal action. That it plays any *considerable* part in actual cure I think is doubtful. The statement as quoted is true in so far as it states that local treatment plus internal medication with a balsam comprises most of the modern treatment of gonorrhea but it is grossly misleading in that it lets one draw the inference that the balsam plays a large if not the principal part."

Dr. H., New York, wrote:

"For a period of at least three years in my hospital, dispensary and private practice, I conscientiously tried out most of the balsamics on the market (including Gonosan, which I favored for some time) both alone, and combined with local injections. As a result of this study, I have come to the conclusion that the balsamics have little, if any value in the treatment of gonorrhea. During the past few years I have relied almost entirely on local therapy, and seldom prescribed any of the balsams in my private practice, certainly in not more than five per cent. of the cases. My results I find are just as satisfactory, and my patients appreciate the fact that they are not loaded up with disagreeable medication. Instead of the balsamics, I am using sodium bicarbonate more and more, and feel convinced that the proper use of this drug is of more value than all of them combined."

Dr. K., Cal., wrote:

"The statement that the combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy, would at present not be justifiable even with reference to the initial or acute stage of gonorrhea, while in the subacute and chronic forms of the disease local injections and balsams play an almost insignificant rôle as compared with various other recognized therapeutic measures."

Meningitis.—The first clearly recognized epidemic of cerebrospinal meningitis occurred in Geneva, Switzerland, in the spring of 1805, followed during the years of 1806 to 1814 by a number of scattered outbreaks in widely separated localities of France and Germany. Coincident with this first series of epidemics in Europe occurred a similar series in America, beginning with an outbreak at Medfield, Mass., in 1806, and continuing until 1819, visiting during this period many localities in the United States and reaching Canada. Since that time periods of epidemic or pandemic prevalence have alternated with periods of comparative rarity. From 1836 to 1850 epidemics appeared in Europe, in France, Germany, Austria, Italy, Spain, Ireland and Denmark and in Algeria. In America there was a succession of outbreaks from 1842 to 1850. In its third period of prevalence, from 1850 to 1860, the disease visited chiefly the Scandinavian peninsula, hitherto spared, causing over 4,000 deaths from 1854 to 1861.—W. H. Frost.

Correspondence

"MEDICAL SCIENCE ON THE SIDE OF ALCOHOL"?

To the Editor:—Recently I received a pamphlet marked as a reprint from a daily paper published in a state where a prohibition campaign is shortly to be waged. The article purports to have been written by one of the oldest and most highly honored members of our profession. The virtues of alcohol are lauded and the action of the House of Delegates at the last annual session of the American Medical Association on the question of the use of alcohol is criticized as is also the position of other scientific and philanthropic organizations. Congress is censured and even the President criticized. It is evident that the pamphlet has been sent broadcast among physicians for the purpose of overcoming the effect of the action of the House of Delegates. The statements made in this article are not supported by up-to-date knowledge of the physiologic and therapeutic action of alcohol, and the arguments advanced are fallacious. The paper seems to be the expression of a personal opinion based on preconceived ideas which are contradictory to the opinions held by advanced thinkers and workers in the medical profession.

On the first page of the pamphlet appears the likeness of the venerable physician who is credited with being the author. Possibly, if they see only this likeness and read no more than the caption, the impression which those who circulate the booklet desire to produce may be made on the minds of certain time-pressed medical men. But any of those who stop to consider the article will not be misled into thinking that there still remains a word in favor of old King Alcohol. The circulation of the article seems to indicate that manufacturers and investors whose business is at stake are making a desperate effort to stem the tide of popular indignation against the use of alcohol. With the realization that millions of bushels of food-producing creals have been diverted from their use as a food for the manufacture of a worse than useless luxury, the public has been aroused to an appreciation of the situation and is clamoring for this grain to be used to feed the starving people of Europe and to relieve the growing food shortage here.

The medical profession, after careful scientific study, has come to appreciate the facts concerning alcohol and knows it to be a determining factor in estimating the increase in insanity, moral degradation, disease and crime. Social workers and religious teachers have shown the impossibility of accomplishing reform while the rum demon is abroad. It must be eliminated. EVAN O'NEILL KANE, M.D., Kane, Pa.

To the Editor:—I am enclosing a pamphlet, recently received by me, and similar copies may have been sent to all the physicians in the United States, including yourself, "Compliments of" whom, not divulged.

I cannot refrain from protesting against both the motive for sending such an article, and also the attempt to create the impression that the leading physicians of the United States sanction such assertions as it contains. I have practiced long enough to learn the evil effects of so-called continued moderate use of alcohol, on the recuperative powers in sickness and accidents, both in young and aged persons. I am aware of the reasons why alcohol is forbidden to athletes in training; why members of big corporations believe better work and fewer accidents are obtained by selecting workmen who do not use it; why a large percentage of crimes is laid to the influence of alcohol intake, thus filling our jails and asylums, for which the people are being taxed; why the laboring class would better itself and families by leaving alcohol alone; why better work has been done by the big armies by excluding or restricting its use; why its influence is always degrading.

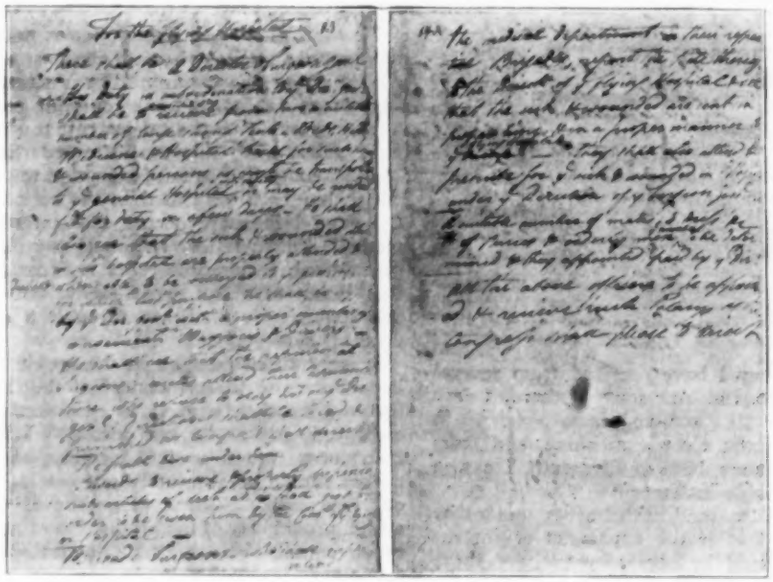
It is not a question of treating a few sick persons; it is a broader, unselfish economic question, involving millions of people. Consequently, I believe I am only one of a large number of physicians who stand ready to sacrifice alcohol for other stimulants and drugs, for the uplift of humanity.

CHARLES E. HAWKES, M.D., Providence, R. I.

ORIGIN OF THE FLYING HOSPITAL

To the Editor:—In view of your editorial, "Larrey the Originator of Rapid Evacuation of the Wounded" (THE JOURNAL, Sept. 29, 1917, p. 1084), the enclosed copy of the scheme written by William Shippen and John Cochran, both of whom were at a later date Surgeons-General in the Army of the Revolution, and in the handwriting of William Shippen, may be of interest to you. This appears in No. 22, folio 9, papers of the Continental Congress, and was transmitted to Congress by Washington, Feb. 14, 1777, and was reported on by the committee, Feb. 24, 1777. It is of decided interest, showing as it does where the "flying hospital" originated. I can find no record that this scheme was actually enacted into a law or of its having been in use in the Continental Army, but it was suggested by William Shippen in 1777 and was a matter of record before the Continental Congress in the handwriting of William Shippen of that date.

W. O. OWEN, M.D., Washington, D. C.



Plan for flying hospital as written by William Shippen in 1777.

FOR THE FLYING HOSPITAL

There shall be a Director & Surgeongenl whose duty in subordination to y-e Dir.-r genl shall be to superintend & reg. receive from him a suitable number of large strong Tents—Beds, Bedding, Medicine & Hospital Stores for such sick and wounded persons as cant be transported to y-e general Hospital with safety or may be rendered fit for duty in a few days.—He shall also see that the sick & wounded while in his hospital are properly attended & dressed & when able, to be conveyed to y-e gen-l Hospital for which last purpose he shall be supplied by y-e Dir. gen.-l with a proper number of convenient Waggons & Drivers.—He shall see that the regimental Surgeons and mates attend their regiments; those who refuse to obey his or y-e Dir. gen-l's directions shall be tried & punished as Congress shall direct.

He shall have under him Stewards to receive & properly dispense such articles of diet as ye Director General shall

give or order to be given him by the Com-y of y-e Army or Hospital.—

Brigade Surgeons who shall superintend the medical department in their respective Brigades, report the State thereof to the Direct-r of y-e flying Hospital & see that the sick & wounded are sent in proper time & in a proper manner to y-e flying hospital. They shall also attend & prescribe for y-e sick & wounded in y-e Hospital under y-e Direction of y-e Surgeon Gen-l of a suitable number of mates to dress. &c & of Nurses and orderly men y-e number to be determined & they appointed & paid by y-e Dir-r., all the above officers to be appointed & receive such Salarys as the Congress shall please to direct.

BELGIAN AND FRENCH PHYSICIANS' FUND

To the Editor:—I append the list of subscriptions which I have received (all of them in cash, up to the present time) for transmission to our Belgian and French colleagues to help in reestablishing themselves in their homes and offices. I hope that this sum may be increased above $1,000 and shall hold it for a short time in the hopes that it may reach a considerably larger sum.

When one remembers the number of physicians in these devastated districts and their utter destitution of everything for home and office or practice, $1,000 will go but a very little way in helping a very few.

SUBSCRIPTIONS IN CASH

Dr. Frederick C. Shattuck, Boston	$ 50.00
Dr. Richard Dewey, Wauwatosa, Wis.	10.00
Dr. Richard Lewisohn, New York	50.00
Dr. W. W. Keen, Philadelphia	100.00
Dr. Joseph Walsh, Philadelphia	10.00
Dr. J. T. Foley, Lewiston, Mont.	25.00
Dr. Helen C. Putnam, Providence, R. I.	100.00
Dr. J. J. Winn, Norwood, Ohio	10.00
Dr. L. H. Finch, Amsterdam, N. Y.	10.00
Dr. Maud J. Frye, Buffalo	5.00
Dr. Glennis E. Humphrey, Cambridge Springs, Pa.	5.00
Dr. R. O. Raymond, Flagstaff, Ariz.	15.00
"A Friend," Keystone, W. Va.	10.00
Dr. H. Gifford, Omaha	500.00
"A Friend," New York	10.00
Dr. George H. Simmons, Chicago	10.00
	$920.00

Besides these gifts of money I have received from several of those in the list gifts of instruments, some of them of very considerable value. I have also received from a friend in New York an eight plate static electric machine, and from two friends, a man and a woman, both of Plymouth, Mass., a considerable number of valuable instruments.

To any friends who wish to send instruments and other appliances I must suggest that if the apparatus or instruments require repairs, it would be necessary to have these done in this country as the means for repairs, I am told on good authority, are almost universally lacking. The polishing and sharpening I would suggest should not be done in this country, for it can be done much more cheaply abroad and also will give occupation to some of the disabled soldiers themselves.

I have also to acknowledge the great kindness of Charles Lentz & Sons of this city, for listing and packing many of these instruments.

W. W. Keen, M.D.,
1729 Chestnut Street, Philadelphia.

THE MORAL OBLIGATION OF THE MEDICAL INTERN TO THE HOSPITAL

To the Editor:—For some years it has seemed desirable that hospitals throughout the country establish among themselves a rule of ordinary decorum relating to applications for appointment to hospital internships. It is notoriously the fact that with few exceptions the recent graduate in medicine has little regard for the contract he makes with the hospital authorities. Very commonly capital is made of the prestige acquired by a hospital appointment in the securing of one elsewhere. An energetic canvasser during his two weeks' summer holiday may "come up" with several good things, as he describes them, and secure options for his friends. He may decide not to come back at all after his vacation and lend himself as a decoy to secure a bevy of interns for his new employer. He will write back to the fellows at his "dear old Alma Mater" and assure them he can fix them. Any curtailment of privileges involved in ordinary hospital staff discipline will furnish cause for a one sided abrogation of his contract and lead to his taking advantage of the offer from another hospital which is at that moment in his pocket.

Among respectable people, it is not customary to dicker with a neighbor's employees, to entice them with promises of better wages, better food, better housing, better opportunities or improved social surroundings. There is no such delicacy on the part of the average hospital management. The restless intern of another hospital will be gathered in without a question. He is not required to have a "character" but is taken on his looks, and without any solicitude as to a proper release from his previous contract.

It is suggested that hospital officials would improve their own morale and that of successive groups of young professional men by establishing among themselves a simple code by which to discourage the unfortunate laxity of professional obligation and duty which in that particular they now condone.

William F. Lockwood, M.D., Baltimore.

THE VENEREAL DISEASES

To the Editor:—In The Journal that has come to me this morning, as well as those of the past weeks, I have read the article under the caption "The Venereal Diseases." Kindly accept my congratulations for your continued discussion of a subject which is of vital interest to every physician and, we must admit, altogether too little understood.

I feel compelled to take exception to a most egregious error which has been published in the serial article of October 6. On page 1171 there occurs the statement that "when other methods fail to relieve tenesmus and pain [in acute posterior gonorrhea], remarkable relief is occasionally obtained by the instillation of a few drops—about ten—of a 1:500 to 1:100 solution of silver nitrate through a soft catheter or deep urethral syringe," etc.

It is admitted later on in the article that such a procedure is "contrary to the principles" of the treatment of acute posterior gonorrhea, and it is cautioned that such should be employed only as "a last resort." The introduction of any instrument into a urethra acutely infected with the gonococcus should be absolutely and emphatically forbidden without exception. Such a procedure is always attended with a high probability of the production of an epididymitis or some other equally serious complication, and should never be attempted.

Further than that, 1 per cent. of silver nitrate injected into even a normal posterior urethra is always followed by more or less annoying tenesmus—the very condition that one attempts to relieve by such an instillation.

James C. Sargent, M.D., Milwaukee.

AN APPEAL FOR WOMEN ON HOSPITAL STAFFS

To the Editor:—In the midst of the urgent appeals on the one hand for more physicians for the Army, and on the other hand the equally urgent appeals not to weaken our medical forces at home, I am moved to ask why the women physicians are not being utilized to fill in the broken ranks and to prevent in a large measure the crippling of our hospitals.

The need for physicians that exists in the warring countries makes its appeal to every man of red blood: and to every woman too. But the men can respond by going; the women cannot.

The war office in Washington refuses the women passports, refuses the offers of well-equipped units, refuses at every turn to avail the government of their services in any way, so that the fact that our medical women are not allowed to take part in the defense of their country cannot in any way reflect on themselves.

In this war, however, in which only the fullest use of all our resources will work toward the ultimate success of our arms, we cannot afford longer to ignore that body of trained women which stands ready to do its part. With the same training and the same license to practice as our medical men, they can be depended on to safeguard the health of the community and by so doing loose the bonds that prevent every man of proper age from springing to his country's call.

Even in conservative England many of the largest London hospitals have women on their staffs, and Sir Alfred Keogh, Surgeon-General of the British Army, in a recent communication to this country says, "Do not underestimate the value of the women physicians; their assistance has been invaluable."

EOLINE C. DUBOIS, M.D., Springfield, Mass.

REST FROM VOCALIZATION IN THE TREATMENT OF LARYNGEAL TUBERCULOSIS

To the Editor:—From time to time articles appear in the journals on the treatment of laryngeal tuberculosis, and it seems strange that so little importance is attached to total nonuse of the voice. In fact, authors generally seem to take it for granted that partial or complete rest will be required; but even so eminent an authority as Ballenger does not even mention it in his textbook. In my experience, absolute rest from phonation has produced far better results than any local applications. In an article on "Rest in the Treatment of Laryngeal Tuberculosis" read before the American Laryngological Association in 1905 (*Tr. Am. Laryngol. Assn.*, p. 149; *Am. Jour. Med. Sc.*, 1905, **131,** 300), stress was laid on the necessity for absolute rest in the successful treatment of this intractable malady. Since then cases have been reported in which the larynx was rested from three to eighteen months with most gratifying results. It has been my custom to demand from every patient consent for absolute rest before undertaking the care of tuberculous cases. Tuberculomas, ulceration, etc., usually form only in the later stages of the disease, and the systemic infection is usually so great by that time that but little hope of success may be expected from any form of treatment. Even then, however, absolute rest with anodyne applications will give more relief than curettage, epiglottectomy or the application of the galvanocautery. It seems, therefore, that absolute rest from phonation should be required in all cases and at all stages irrespective of any other measures that may be instituted.

W. PEYRE PORCHER, M.D., Charleston, S. C.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SALKOWSKI-KOJO TEST FOR COLLOIDAL NITROGEN IN THE URINE

To the Editor:—In THE JOURNAL, Sept. 15, 1917, p. 941, you refer to the Salomon-Saxl test, with which I am familiar; also to the Salkowski-Kojo test with which I am not familiar. What is the latter, or where can I find it? C. H. WALKER, M.D., New York.

ANSWER.—In the article summarized on page 941, Kahn states that Salkowski and Kojo have recently (1910) suggested several methods for determination of the colloidal nitrogen in the urine, and in 1911 Kojo published (*Zeitschrift für physiologische Chemie*, 1911, **73,** 416) the results of a comparative study of the various procedures suggested in this connection. Kahn tabulates the findings in 128 cases, including twenty-two healthy persons and fifty-nine with cancer, tested by the Salomon-Saxl method and for the colloidal nitrogen. The technic used for the latter he describes as follows: "The urine was first tested for coagulable protein which, if found, was removed by means of heat coagulation, with addition to the boiling liquid of a few drops of dilute acetic acid. To 100 c.c. of a mixed, filtered, twenty-four hour specimen of urine, zinc sulphate was added in sufficient quantity to effect saturation. The saturated liquid was allowed to stand for twenty-four hours, then filtered through ashless paper, and the precipitate washed several times on the paper with saturated zinc sulphate solution to remove nitrogenous substances adherent to the precipitate. The paper and precipitate were then placed in a Kjeldahl flask and the nitrogen content determined by the Kjeldahl method. The total nitrogen in 5 c.c. of urine was also determined by the Kjeldahl method. The ratio of the nitrogen in the zinc sulphate precipitate to the total urinary nitrogen was computed." In the healthy the nitrogen value for the zinc sulphate precipitate, as compared with those for total nitrogen, varied from 1.25 to 2.15, with an average of 1.67 per cent. In the fifty-nine cancer cases the range was up to 5.75 per cent. of the total nitrogen, the minimum being 3.4 per cent. Fifty-eight of the fifty-nine cases of cancer gave a positive Salomon-Saxl reaction.

SURGICAL AND MEDICAL INCIDENTS IN THE BIBLE

To the Editor:—I am asked to give a talk on the surgical and medical incidents found in the Bible from a modern standpoint. Kindly refer me to some literature that will help me in preparation.

EUGENE A. HENSEL, M.D., San Diego, Calif.

ANSWER.—We may refer you to the following articles:

Allen, D. B.: Diseases Mentioned in the Bible, *Dietet. and Hyg. Gaz.*, 1908.
Blakely, S. B.: Medicine of the Old Testament, *Sc. Am. Supp.*, July 31, 1915; Aug. 7, 1915.
Blakely, S. B.: The Medicine of the Old Testament, *Med. Rec.*, New York, 1915, **87,** 934.
Mendelsohn, S.: The Arterial Function and the Circulation in Ancient Rabbinic Literature, *Charlotte Med. Jour.*, 1915, **71,** 269.
Lamb, D. S.: The Old Hebrews, a Medieval and Sanitary View, *Med. Pickwick*, 1915, **1,** 372.
The Medical Language of the Third Gospel, *Lancet*, London, 1911, **1,** 44, 331.
Spivak, C. D.: An Anatomic Prayer, THE JOURNAL, Sept. 30, 1916, p. 1037.
One Minute Biographs, THE JOURNAL, Jan. 9, 1915, p. 151.
Field, D.: Medical Facts Gleaned from the Holy Scriptures, *Therap. Rec.*, 1909, **4,** 30, 62, 84.
Peters: Die Pathologie der Bibel, Med. Woche, 1907, **8,** 552, 562, 574.
Murphy, H. B.: Biblical Medicine and Hygiene, *Montreal Med. Jour.*, 1908, **37,** 83.

MAKING WATER SAFE FOR DRINKING PURPOSES

To the Editor:—In an irrigated district where drinking water can be had only from cisterns filled from irrigating ditches, what is the best method of rendering the water safe for drinking purposes? Assuming that chemicals are to be used, what is the highest harmless concentration, the lowest effective? What is the most effective way to remove or precipitate fine silt?

Please omit my name. O. B. L.

ANSWER.—Chlorinated lime is most generally used for sterilization of drinking water, 1 part of available chlorin per million being sufficient (THE JOURNAL, Jan. 27, 1912, p. 279). Recently halazone tablets have been proposed for water disinfection (THE JOURNAL, Oct. 6, 1917, p. 1166). Very full description of water purification methods are given in "Water Purification Plants and Their Operation," by Milton F. Stein, John Wiley and Sons, New York, 1915. The book contains excellent diagrams and accurate data as to amount of coagulent to be used, cost of operation, etc. Good general information on water supplies may be found in "Clean Water and How to Get It," by Allen Hazen, John Wiley and Sons, 1914.

OCHSNER'S SOLUTION

To the Editor:—Kindly give the ingredients and their proportions in Ochsner's solution. A. P. H.

ANSWER.—Ochsner's solution consists of phenol (carbolic acid), 0.5 per cent.; aqueous saturated solution of boric acid, 66 per cent., and alcohol, 33 per cent.

Familial Polyadenomatosis in the Rectum.—A. Oidtmann has encountered eight cases of this kind, and six of the patients belonged to two families, three sisters in one family, and mother, son and daughter in the other. One of the three sisters succumbed to hemorrhages; the others were cured by resection of the protruding bunches. The *Nederlandsch Tijdschrift voor Geneeskunde* publishes his report in Society Proceedings, 1917, **1,** 2184, with illustrations, and references of nine other families showing from two to six cases of polyadenomatosis. A cancerous tendency was evident in eight of the total twenty-seven cases in this group, and in all but three of Oidtmann's own eight cases.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Little Rock, Nov. 13-14. Sec., Dr. T. J. Stout, Brinkley.

Arkansas: Eclectic: Little Rock, Nov. 13. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.

Connecticut: New Haven, Nov. 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

Connecticut: Homeopathic: New Haven, Nov. 13. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

Connecticut: Eclectic: New Haven, Nov. 13. Pres., Dr. J. W. Fyfe, Saugatuck.

Maine: Portland, Nov. 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

National Board of Medical Examiners: Chicago, Oct. 10-18. Sec., Dr. J. S. Rodman, 2106 Walnut St., Philadelphia.

Nevada: Carson City, Nov. 5. Sec., Dr. S. L. Lee, Carson City.

New Jersey: Trenton, Oct. 16-17. Sec., Dr. Alexander MacAlister, 438 E. State St., Trenton.

South Carolina: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, Nov. 20-22. Sec., Dr. M. F. Bettencourt, Mart.

West Virginia: Clarksburg, Nov. 21-23. Chairman, Dr. S. L. Jepson, Capitol Bldg., Charleston.

Medical Colleges of the United States Recognized in Canada

A report received from the Medical Council of the College of Physicians and Surgeons of Ontario states that in June, 1917, the following medical schools of the United States were given recognition:

Leland Stanford Junior School of Medicine, San Francisco.
University of California Medical School, San Francisco.
Yale University School of Medicine, New Haven.
Northwestern University Medical School, Chicago.
Rush Medical College, Chicago.
Indiana University School of Medicine, Indianapolis.
Johns Hopkins University Medical Department, Baltimore.
Harvard University Medical School, Boston.
University of Michigan Medical School, Ann Arbor.
University of Minnesota Medical School, Minneapolis.
Washington University Medical School, St. Louis.
University of Nebraska College of Medicine, Omaha.
Columbia University College of Physicians and Surgeons, New York City.
Cornell University Medical College, New York City.
Syracuse University College of Medicine, Syracuse.
Ohio State University College of Medicine, Columbus.
Western Reserve University School of Medicine, Cleveland.
Jefferson Medical College of Philadelphia.
University of Pennsylvania School of Medicine, Philadelphia.
University of Pittsburgh School of Medicine, Pittsburgh.

The report states that graduates of the above schools, under certain limitations, will be permitted to take the examination for the license to practice medicine in Ontario. An extract from the regulations is as follows:

"Students graduating subsequent to July 1, 1916, from 'recognized' medical colleges in any of the United States shall submit a certificate from that state board of licensure that the candidate is fully qualified for admission to the examination of that state board. Certificates will be accepted from state boards (1) which accept similar certificates from this Council and (2) whose standards are equivalent to those of this Council."

Washington January Examination

Dr. C. N. Suttner, secretary of the State Board of Medical Examiners of Washington, reports the written examination held at Spokane, Jan. 2-4, 1917. The examination covered 11 subjects and included 110 questions. The percentage required to pass was 75. Thirty-four candidates were examined, of whom 27 passed, including 5 osteopaths, and 7 failed, including 2 osteopaths. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
George Washington University	(1916)	1
American Medical Missionary College	(1900)	1
Northwestern University	(1912) (1914)	2
Rush Medical College	(1915)	1
University of Illinois	(1914) (1915) (1916)	3
Drake University	(1913)	1
Hospital College of Medicine, Louisville	(1904)	1
University of Michigan Med. School	(1916)	1
University of Minnesota	(1916)	1
National University of Arts and Sciences	(1916)	1
John A. Creighton Medical College	(1912)	1
Jefferson Medical College	(1911) (1913) (1915)	3
Woman's Medical Coll. of Pennsylvania	(1909)	1
Nagasaki Special Medical School	(1903)	1
Nippon Special Medical School	(1912)	1
Okayama Special Medical School	(1901)	1
Sai Sei Medical College, Tokyo	(1904)	1
FAILED		
University of Louisville	(1912)	1
Saginaw Valley Medical College	(1902)	1
Barnes Medical College	(1905)	1
Kyushu Imperial University	(1913)	1
Nippon Special Medical School	(1912)	1

Medicolegal

Illegal Prescribing of Intoxicating Liquor

(City of Seattle vs. Hewetson (Wash.), 164 Pac. R. 234)

The Supreme Court of Washington affirms a conviction of the defendant, a licensed physician, who was charged with having issued a prescription for whisky, without having any good reason to believe that the person to whom it was issued was actually sick, or that the liquor was required as medicine. The court says that the evidence showed that the defendant had an office in the back part of a room occupied by a drug store. That the office could be entered by a door from the portion of the building used for the drug store. That on the evening of Feb. 19, 1916, the complaining witness went to the defendant for the purpose of getting a prescription for liquor. That he entered through the drug store, found seven or eight persons standing in line, waiting for similar prescriptions, and, when his turn came, said to the defendant that he had a cold, or a bad cold. That thereupon the defendant inquired of him if he would like a little stimulant, to which he replied, "Yes." That before receiving the prescription he was required to sign a statement as follows: "I, the undersigned, do declare that the prescription written for me by Dr. J. W. Hewetson for intoxicating liquor, on this date is for medical purposes; that I am sick and in need of medicine, and will take the same according to directions. Dated this 19th day of February, 1916. M. W. Palmer, 135 N. 75th St." That there was no examination of the complaining witness as to his physical condition. The evidence further showed that the record book and the prescription file at the drug store disclosed that, February 19, 164 prescriptions for liquor had been filled; February 18, 103; February 17, 105, and February 16, 83—and that most of these prescriptions had been written by the defendant. It was admitted, on the trial, that any one "could get a prescription for intoxicating liquor unless he refused to sign one of these statements," and that the defendant had "for the past two years written prescriptions free of charge." There was also some evidence as to the number of persons standing in line, waiting to have prescriptions written, on other occasions than the one above referred to. Under this evidence, and other details that appeared in the testimony, the question whether the defendant had ground to believe that the person to whom he issued the prescription was actually sick, or that liquor was required as medicine, was for the determination of the jury. It could not be held, as a matter of law, on such evidence, that the plaintiff had failed to prove that the defendant, when he issued the prescription for which he was being tried, did not have good reason to believe that the person to whom it was issued was actually sick, and that the liquor was required as medicine. The real issue in such a case is whether the prescription was given in good faith, and, as bearing on this question, the number of prescriptions given by the accused, within a specified time, for intoxicating liquor, to various persons, as found on the file of the druggist, in whose store the defendant kept his office, was competent. The sections of the city ordinance which the defendant was charged with violating were regulative in their nature, and, in passing such an ordinance, the city acted within its power.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Oto-Laryng., Pittsburgh, Oct. 29-30.
Am. Assn. for Study and Prev. of Inf. Mort., Richmond, Va., Oct. 15-17.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
Amer. Public Health Association, Washington, D. C., Dec. 4-7.
Clinical Congress of Surgeons, Chicago, Oct. 22-26.
Kentucky State Medical Association, Louisville, Nov. 6-9.
Medical Association of the Southwest, Kansas City, Oct. 15-17.
Nevada State Medical Association, Reno, Oct. 18-19.
Southern Medical Association, Memphis, November 12-15.
Virginia State Medical Society, Roanoke, Oct. 23-26.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Thirtieth Annual Meeting, held at Newark, N. J., Sept. 17-19, 1917

The President, Dr. JOHN W. KEEFE, Providence, R. I., in the Chair

Fundal Hysterectomy to Reduce the Menstruating Surface

DR. GORDON K. DICKINSON, Jersey City, N. J.: Fundal hysterectomy, done through the vagina, is a simple, safe and effective procedure. After a purse-string has been placed around the anus, a clip is applied to each labium, which is retracted open. Into the vagina is poured an ounce or more of 3.5 per cent. tincture of iodin, which is allowed to remain while the patient is being draped. When everything is ready, a volcellum is put on the cervix and it is brought down. A transverse incision is made anterior to the cervix, the bladder is separated from the uterus, the peritoneal cavity is opened, and the fundus is brought into the vagina. Clips are applied alongside the uterus to compress the circulation slightly and to act as retractors. A V-shaped incision is then made through the substance of the uterus for various depths, depending on the extent of the disease as estimated by the hemorrhage. This is not made too close to the fornix because the object is not so much the reduction in size of the uterus as the reduction of the menstrual surface. After this wedge-shaped piece is removed, both fornices should be cauterized thoroughly. If not, they will respond at the menstrual period, and, producing tension, give rise to pain. The cervical portion should also be touched for aseptic reasons. The part removed is carefully inspected for any appearance of malignancy. With a small, sturdy, curved needle the two flaps are approximated, stanching hemorrhage. The peritoneal surface is further brought together by running catgut, the clips are removed, the uterus is pushed back into place, and the anterior colpotomy wound sutured.

DISCUSSION

DR. ALBERT GOLDSPOHN, Chicago: Some obstetricians may object to opening the abdomen and cutting the uterus in order to find out what is wrong in it. More efficient work can be done medically to help some of these cases that are not extremely bad. Tincture of iodin applied effectively to the endometrium, say about twice a month, will make it unnecessary to operate in many of these cases. Zinc chlorid will be needed once in a while, and although it is destructive, it will do the work. If zinc chlorid is to be applied well to the endometrium, it is necessary to dilate the cervical canal. The woman will need to have morphin, or the cervical canal must be anesthetized with phenol (carbolic acid) or cocain. Ample dilation is made under a clean technic. The application is made with some kind of syringe applicator, the cervical canal being cauterized extensively, but not the fundus. Then the zinc chlorid is introduced without any difficulty. Treatment of this kind does much more good than any mechanical curettement.

DR. HUGO O. PANTZER, Indianapolis: To ablate the entire endometrium would inflict unnecessary violence on the sexual function and on the chemism of the whole body, and we should hesitate to use the cautery for the destruction of the endometrium. It is better to remove only a part of the endometrium, as suggested by the essayist. I wonder whether we ought to regard these cases as toxemias due to a focal infection.

Physical Conditions in Women Warranting Sterilization

DR. E. W. HEDGES, Plainfield, N. J.: There are conditions when sterilization will save lives that otherwise would be sacrificed. The operation is indicated when a woman has had eclampsia in two successive labors or when real diabetes exists. Chronic nephritics should never marry or conceive. The same rule applies in cases of pulmonary tuberculosis. Both diseases are aggravated by pregnancy, and a fatal termination is hastened. Patients with bad cases of heart decompensation should not conceive. The vast majority of the children in such cases die in abortion, premature labor or stillbirth, and a third of the mothers needlessly lose their lives. In all the classes of cases mentioned, the children, even if born alive, enter life with a physical handicap, and the risk for the mother is so great that it should be prevented by sterilization. If seen first when pregnancy has commenced, an abdominal hysterotomy and sterilization should be done at the same time. If the child is near viability, an attempt may be made to tide the patient over a short time and then bring on labor. As to pyosalpinx, if the woman is well to do, she should be let alone with a nurse and a fountain syringe and an easy chair; but if she has to earn her living, her tubes should be taken out and her health restored. Persons with certain forms of insanity, the feebleminded and idiots, as well as epileptics, should be cared for in institutions; but if the patient lives at home, the question of sterilization should be considered.

DISCUSSION

DR. EDWARD J. ILL, Newark, N. J.: Dr. Hedges has touched on a question that is going to be abused just as much as was the removal of the uterus or the ovaries. The sterilization of women is a legitimate and proper procedure, but we must be careful in the selection of cases. I think we all agree that the state has a perfect right to sterilize epileptics and criminals, the insane and the idiotic, whether male or female. We can also say that patients who have undergone repeated cesarean section should be sterilized. When it comes to cases of chronic nephritis, I am not quite sure that we have a right to sterilize such women. In these days of commercial crazy surgery, it is well worth while to set a limit to what we are going to do in this particular field.

DR. HERMAN E. HAYD, Buffalo: Dr. Hedges suggests an omniscience on the part of the surgeon that does not exist. For him to assume that such and such a case of diabetes, and such and such a case of chronic nephritis is going to terminate fatally is unscientific. It is too sweeping, and, moreover, that we should possess surgical qualifications which will enable us to carry these people through this surgical undertaking without a mortality is equally absurd and extravagant. I believe that sterilization would be justifiable in these cases of chronic nephritis and of diabetes, provided these women may die of some unrelieved condition, such as a perforating ulcer of the stomach, a duodenal ulcer, an acute gangrene of the gallbladder, or an acute appendicitis.

DR. GORDON K. DICKINSON, Jersey City, N. J.: I have never had the courage to sterilize women, except for narrow pelves, and when the children cannot be born except by repeated cesarean sections. If we feel the necessity of saving a woman from pregnancy; if, after carefully studying the woman as well as the condition, we think it is wise to sterilize her, we should do so, but not until we try other measures which are well known and which are not surgical.

DR. CHARLES L. BONIFIELD, Cincinnati: Certain conditions have been mentioned which justify sterilization; but the essayist's enthusiasm has carried him beyond the sphere of a private physician. If the state makes laws to prohibit marriage, or to necessitate the sterilization of certain women, we shall, in obeying these laws, be considered good citizens. But my conscience will not permit making a law for myself as broad as the doctor has laid down. I do not believe it is within the province of the physician, in some of these conditions, to place a woman so that she cannot become pregnant. If she should not become pregnant, it is the physician's duty to tell her and her husband so, and then they must decide what shall be done.

Dr. Robert T. Morris, New York: Dr. Hedges' paper is all right, but it requires elaboration. I would not think of sterilizing a woman for diabetes until I had ascertained the cause of her diabetes. We must remember that diabetes is not a disease but a symptom. As to tuberculosis, more than 50 per cent. of the people in all the civilized world have had evidences of this disease of one sort or another during some stage of their lives. In tuberculosis of the lungs, advancing and uncontrolled, I would say, sterilize the woman.

Dr. William E. Darnall, Atlantic City, N. J.: I do not believe that Dr. Hedges meant to say that sterilization should be performed in every one of the cases he enumerated, but I do believe there are patients in each one of these classes that should be sterilized. After a thorough study of the case of the woman and her tendencies, there may be found in each class some women who need to be sterilized.

Dr. E. W. Hedges, Plainfield, N. J.: If a woman presented anasarca, rapid heart, dyspnea and extreme symptoms of poisoning from chronic nephritis, I would not hesitate to sterilize her. When the textbooks tell us that 30 per cent. or more of mothers that become pregnant under conditions of chronic nephritis die, we are warranted in advocating sterilization of such women to save life.

Operation for the Cure of Complete Perineal Laceration

Dr. Edward J. Ill, Newark, N. J.: I make an H-shaped incision which extends from just inside Bartholin's duct down to the outer side of and behind the ends of the sphincter. The horizontal bar of the H starts above the end of the sphincter and continues across the vaginorectal junction. The anterior and posterior flaps are elevated, particular care being exercised to denude the ends of the sphincter. Submucous suture of the rectum by a double line of fine plain catgut is done. The catgut never touches the rectal mucous membrane. Deep silver wire perineal sutures are used, and the vagina is sutured with plain catgut.

Prolapse of the Uterus

Dr. Charles L. Bonifield, Cincinnati: Recognizing how and why prolapse has occurred, the rational treatment is to decrease the weight of the uterus, replace it in its normal location and attitude and relieve it of all its abnormal burdens. The weight of the uterus may be decreased by rest in bed, curettage and amputation of the cervix, which is always hypertrophied in these cases. The uterus may be held in its normal place and attitude by a Gilliam operation, or, if the patient has passed the child-bearing period, by a ventral suspension, which is a little more easily and quickly done. The uterus may be relieved of other burdens by the proper operations on the posterior vaginal wall and perineum and the anterior vaginal wall. Some surgeons do not like to take the time necessary to perform the surgical steps that result in an anatomic and physiologic cure of these cases. If the operator is determined to be very deliberate about his work, there is no reason why the operation should not be divided into two steps. It is better to restore a woman to her normal condition by an operation that requires time and care for its execution, than to mutilate her with one that seems more brilliant and can be done in less time.

Operative Treatment of Procidentia

Dr. Arthur T. Jones, Providence, R. I.: In the selection of an operation we must take into consideration the age of the patient, whether the woman is still in the child-bearing period and capable of becoming pregnant. No operation which does not permit of pregnancy and the patient carrying her child to term should be performed on a woman still within the child-bearing age. If it is necessary to remove the uterus, the vagina and cervical stump may be suspended so as to prevent further prolapse of the vagina and cervix. No operation for procidentia is satisfactory which does not include the proper vaginal and perineal work, as support is needed below in conjunction with any suspension or interposition operation. In women still within the child-bearing period, without complications or disease of the appendages, the Alexander operation, in connection with proper vaginal work, has proved very satisfactory in my hands. In women past the menopause, the interposition operation of Watkins-Wertheim has given greater satisfaction than any other method.

Preeclamptic Cesarean Section

Dr. John Wilson Poucher, Poughkeepsie, N. Y.: When a patient at or approaching term, in spite of all means of elimination, shows by nervousness, sleeplessness, severe headaches, high blood pressure, edema and excessive albuminuria that convulsions are imminent, she should be delivered at once by the method that will cause the least delay, produce the least shock, and give both mother and child the best chance for recovery. Since 1914 I have done seven preeclamptic cesarean sections. All seven mothers and eight children survived. Two were operated on after labor had begun, five before the beginning of labor. Two suffered postpartum convulsions, two having two convulsions, the other one convulsion, which were easily controlled.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

September, XXII, No. 2

1 Behavior of Cross Striated Muscle in Tissue Cultures. W. H. Lewis and M. R. Lewis.—p. 169.
2 Studies on Mammary Gland. Fetal Development of Mammary Gland in Female Albino Rat. J. A. Myers, Minneapolis.—p. 195.
3 Existence of Typical Oestrous Cycle in Guinea-Pig; Study of Its Histologic and Physiologic Changes. C. R. Stockard and G. N. Papanicolaou, New York.—p. 225.
4 Study of Intercalated Disks of Heart of Beef. H. E. Jordan and J. B. Banks.—p. 285.

American Journal of Physiology, Baltimore

September, XLIV, No. 2

5 Study of Clotting of Plasma of Frog's Blood and Transformation of Clot into Fibrous Tissue. G. A. Baitsell, New Haven, Conn. —p. 109.
6 Volume of Blood During Hibernation and Other Periods of Year in Woodchuck (Marmota Monax). A. T. Rasmussen and G. B. Rasmussen, Minneapolis.—p. 132.
7 *Relation of Rate of Spontaneous Liberation of Epinephrin to Rate of Blood Flow Through the Suprarenals. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 149.
8 *Effect of Varying Calcium and Potassium Content of Perfusion Fluids on Vagus Inhibition. B. M. Brine, New York.—p. 171.
9 *Action of Epinephrin on Blood. M. L. Menten, Chicago.—p. 176.
10 *Effect of Accumulation of Carbon Dioxid on Tidal Air and on H-Ion Concentration of Arterial Blood in Decerebrate Cat. R. W. Scott, Cleveland.—p. 196.
11 Skin of Catfish (Amiurus Nebulosus) as Receptive Organ for Light. A. P. Van Heusen.—p. 212.
12 *Effects of Epinephrin on Distribution of Blood. Venous Discharge from Thyroid Glands. R. E. L. Gunning, Chicago. —p. 215.
13 *Physiology of Stomach; Hunger and Apetite in Fever. J. Meyer and A. J. Carlson, Chicago.—p. 222.
14 *Id. Influence of Experimental Ulcers of Stomach and Duodenum on Hunger Contractions of Empty Stomach. J. R. Dundon, Chicago.—p. 234.
15 Genesis and Inhibition of Extensor Rigidity. S. Cobb, A. A. Bailey and P. R. Holtz, Baltimore.—p. 239.

7. Effect of Blood Flow on Liberation of Epinephrin.—It it shown by Stewart and Rogoff that within the limits of error of the method used for the assay (rabbit intestine and uterus segments) the concentration of epinephrin in the suprarenal vein blood collected from a cava pocket varies in different samples from the same animal inversely as the rate of blood flow through the glands during the period of collection, the rate of output of epinephrin per minute being constant under the experimental conditions for a considerable range of blood flow. The rule fails, of course, when the rate of blood flow is diminished below the value at which the concentration of epinephrin has reached the possible maximum. For this reason determinations of the rate of spontaneous liberation of epinephrin by assays on drawn supra-

renal vein blood should be made on samples obtained with a rate of flow well above this limiting value.

8. **Effect of Calcium on Vagus Inhibition.**—Brine found that calcium-free solutions or solutions with a very small percentage of calcium do not interfere with vagus activity, contrary to results previously reported.

9. **Action of Epinephrin on Blood.**—Blood from the suprarenal vein of a dog, diluted to 10 per cent., 6.6 per cent. and 5 per cent. with normal saline, Tyrode's solution or dog's serum in which the dissolved oxygen is kept at a minimum, shows spectroscopically intensification of the oxyhemoglobin bands. Spectra obtained when epinephrin (base) is added to diluted venous blood are identical with those given by suprarenal vein blood similarly diluted. Venous blood to which epinephrin is added or suprarenal vein blood forming an increase of oxyhemoglobin when diluted show in from one to five hours, if the oxygen dissolved in the dilution medium be minimal, a transformation of the oxyhemoglobin into urobilin. Addition of epinephrin to diluted human venous blood causes an increase in the intensity of the oxyhemoglobin absorption bands. The possible physiologic significance of these reactions for the heart and lungs in the living organism is discussed by Menten.

10. **Carbon Dioxid Acidosis.**—The definition that acidosis is a condition in which there is an actual increase in the H-ion concentration of the blood, Scott says, is the only one that is sufficiently comprehensive.

12. **Effect of Epinephrin on Blood Flow in Thyroid.**—Experiments made by Gunning showed that epinephrin in all dosages produces vasoconstriction in the thyroid gland. There is a slight tendency to overrecovery in the outflow, due supposedly to vascular fatigue. The threshold is lower than in any other organ so far studied. In no case was primary dilatation observed. The literature seems to support the apparent paradox that an increased secretory activity of the thyroid is accompanied by vasoconstriction.

13. **Hunger and Appetite in Fever.**—There is an absence of hunger contractions and a lowering of the stomach tonus during fever in dogs when the temperature reaches 103 F. and above; this being especially true in the temporary fevers. The temperature elevation itself is a factor in the depression of the stomach tonus and an inhibition of hunger contractions. The splanchnic nerves do not appear to be involved in the inhibition. The fever or the toxins appear to induce a lowering of vagus tone, and this leads to a cessation of the hunger contractions. But the authors do not believe that this will account for absence of hunger during a fever lasting ten to twenty days. Bacterial toxins, namely, B. paratyphoid toxin, B. prodigiosis, tetanus and diphtheria toxin, sodium nucleate, have no direct action on the contractions of stomach musculature, particularly of pyloric strips. Starvation does not induce fever in new-born pups.

14. **Experimental Ulcers and Gastric Hunger Contractions.**—In three out of four dogs with ulcers in the duodenum or the pyloric end of the stomach the motility of the empty stomach was greater than normal. But this augmentation of the gastric hunger contractions was not sufficiently marked to account for the excessively painful character of these contractions in ulcer patients. It is therefore probable, says Dundon, that the hunger pains in gastric and duodenal ulcers in man are not due to excessive hunger contractions, but to hyperexcitability of the sensory nerves in the stomach wall, as suggested by Carlson. The effects of gastro-enterostomy on the gastric hunger contractions are variable, with a tendency to depression. The hypomotility, when present, may be due to valve-like action of the intestine opposite the stoma causing retention of the food in the duodenum and hence a reflex inhibition of the stomach from the duodenum as well as regurgitation through the stoma.

American Journal of Roentgenology, New York

September, IV, No. 9

16 Congenital Absence or Defects of Bones of Extremities. P. Lewin, Chicago.—p. 431.
17 Roentgenotherapy of Peripheral Tuberculous Adenopathy. E. Albert-Weil, Paris.—p. 449.
18 Localization of Foreign Bodies. L. G. Cole, New York.—p. 455.
19 Roentgen Diagnosis of Pulmonary Tuberculosis. H. K. Pancoast, Philadelphia.—p. 462.
20 Roentgen Diagnosis of Polypi of Maxillary Sinuses. C. A. Waters and H. P. Doub, Baltimore.—p. 470.
21 Standard Tintometer for Sabouraud's Pastilles. D. Corbett, London.—p. 472.
22 Case of Cardiospasm Resembling Malignant Stricture of Esophagus. J. S. Derr, Atlanta, Ga.—p. 477.

American Review of Tuberculosis, Baltimore

September, I, No. 7

23 Experimental Tuberculosis of Rabbit's Liver: A Study of Immunity. W. B. Soper, Saranac Lake, N. Y.—p. 385.
24 Reaction of Local Tubercle. Method for Determining Value of Indirect Therapeutic Agents in Tuberculosis. H. J. Corper, Chicago.—p. 407.
25 *Gold Therapy of Tuberculosis. L. M. DeWitt, Chicago.—p. 424.

25. **Gold Therapy of Tuberculosis.**—DeWitt's work on the gold therapy of tuberculosis has extended over two years and was carried on practically exclusively on tuberculous guinea-pigs. She began her experiments with the ordinary gold cyanids, $AuK(CN)_2$, $Au(CN)_3$ and AuCN. Her results show that life was not prolonged and the disease was not checked as compared with the control animals. The average duration of the disease in the untreated controls was considerably longer than in the treated animals. The extent of the disease in the two set of animals was also about the same. The gold was administered by intracardiac, intramuscular and subcutaneous injections at intervals, with feeding of the gold salt on all days when there was no injection. The subcutaneous injections caused considerable necrosis and the intracardiac were by no means without danger; and the treatment apparently had no beneficial effect on the progress of the disease.

Archives of Pediatrics, New York

August, XXXIV, No. 8

26 *Seven Years of Clinical and Laboratory Experience with Meningitis in New York City. P. L. Du Bois and J. B. Neal, New York.—p. 561.
27 Poliomyelitis; Analysis of Sixty-Three Cases. W. L. Carr, New York.—p. 591.
28 Macroscopic and Microscopic Findings in Poliomyelitis. J. H. Larkin, New York.—p. 601.
29 Care and Feeding of Premature Infant: Analysis of Cases. A. Brown, and R. George, Toronto.—p. 609.

26. **Experience with Meningitis.**—This article contains too much meat to be abstracted in its entirety, but the section on treatment may be summarized as follows: Various methods of treating the acute stage of poliomyelitis were tried during the summer of 1916, without very decisive results. The intraspinal injection of epinephrin was endorsed by only a few after it had been used for a short time. The injection of human immune serum was quite extensively tried. Injecting a foreign substance into the slightly inflamed meninges sets up in most instance an acute aseptic meningitis, as is shown both by changes in the spinal fluid, and clinically by an increased temperature, headache, vomiting and rigidity of the neck. It seems possible that this increased inflammatory reaction may tend to accentuate the inflammatory process already existing in the subjacent substance of the brain and cord. That this reaction may be harmful was further borne out by the results of animal inoculation, the treated animals showing a higher mortality and a more rapid death than the controls, in the majority of cases. While great improvement seemed to follow the administration of serum in certain cases, equally great improvement occurred with no serum in at least an equal number of cases. In view of these considerations the physicians of the meningitis division of the New York Department of Health feel that the best treatment of early cases is complete rest, with lumbar puncture for the relief of pressure symptoms, in addition, of course, to general symptomatic and hygienic treatment.

Arkansas Medical Society Journal, Little Rock

September, XIV, No. 4

30 Some of the Most Important Medical Plants Indigenous to State of Arkansas. J. T. Clegg, Siloam Springs.—p. 73.
31 Vaccination. G. A. Warren, Black Rock.—p. 76.
32 Case of Foreign Body in Larynx. R. B. Moore, Little Rock.—p. 77.
33 Amputation of Arm with Razor and Hand Saw. M. S. Alexander, Wirt, Okla.—p. 78.

Boston Medical and Surgical Journal

September 20, CLXXVII, No. 12

34 Hemorrhage During Pregnancy; Accidental, Inevitable, Postpartum. - R. L. De Normandie, Boston.—p. 391.
35 *Chronic Valvular Heart Disease in Pregnancy and Labor. F. S. Kellogg, Boston.—p. 398.
36 Technic of Abdominal Cesarean Section; Report of Sixty Cases. R. C. Cochrane, Boston.—p. 410.
37 Bleeding in Pregnancy. R. S. Titus, Boston.—p. 413.
38 Management of Labor. G. P. Twitchell, Greenfield.—p. 419.

35. **Chronic Valvular Heart Disease in Pregnancy.**—The following conclusions are drawn by Kellogg from a study of cases of chronic valvular heart disease in pregnancy and labor. Of pregnant women, 1 to 2 per cent. have chronic endocarditis. Under prenatal care, 15 to 20 per cent. have shown some decompensation, half of these 1 degree decompensation, half 2 degrees decompensation. Cases with stenosis of the mitral valve, with or without insufficiency, are far likelier to decompensate in pregnancy than cases with simple insufficiency. The maternal mortality of chronic valvular disease in pregnancy is 2 per cent. The maternal mortality of cases showing 2 degrees decompensation, requiring induction and 2 degrees decompensation in labor, is 45 per cent. Mitral stenosis is almost always present in fatal cases. Fetal mortality runs from 10 per cent., in a series including all cases, to 40 per cent. in cases with 2 degrees decompensation. Chronic valvular heart disease complicating pregnancy is, in view of these figures, potention of their lives so that they do not again decompensate, and so that they will stand any appropriate method of delivery at term. Many chronic valvular heart cases compensated and with only slight degrees of decompensation and some with 2 degrees decompensation will safely deliver themselves if allowed to. Though this fact is undeniably true, theoretically, and with what data we have at hand, it should not be allowed. Normal delivery and accouchement forcé have no place in the treatment of chronic valvular heart cases in pregnancy or labor. It is not justifiable to attempt to carry a woman who is decompensated to term for the sake of her baby unless she reacts favorably to treatment almost immediately, especially as the fetal mortality in these cases is so high that one overrisks the mother for the sake of a problematic child.

Canadian Medical Association Journal, Toronto

September, VII, No. 9

39 Anesthesia from Commercial Ether Administration and What It Is Due To. J. H. Cotton, Toronto.—p. 769.
40 *Shrapnel Balls. Their Roentgenographic Characteristics, Compared with Bullets and Other Foreign Bodies. A. H. Pirie.—p. 778.
41 *Radical Cure of Inguinal Hernia. F. N. G. Starr.—p. 782.
42 Subconjunctival Epidermal Cyst. J. W. Stirling, Montreal.—p. 785.
43 Complications of Mastoiditis. D. H. Ballon, Montreal.—p. 788.
44 Medical Education in Japan. F. W. Schofield, Seoul, Korea.—p. 796.
45 *Helping to Solve a Prairie Problem. How People of Western Provinces Are Endeavoring to Provide Hospital Accommodation for Rural Sick. D. G. Tuckwell, Lloydminster, Saskatchewan.—p. 800.
46 Ozena Among Various Races of Earth. J. N. Roy, Montreal.—p. 804.
47 Bacteriuria in Some Chronic Diseases with Special Reference to Intestinal Stasis. W. A. Bigelow, H. S. Sharpe and L. J. Carter, Brandon, Man.—p. 810.
48 Report on Spring-Balance Muscle Tests as Devised by Lovett. L. M. Lindsay, Montreal.—p. 815.
49 Case of Erythemia (Vaquez' Disease). R. J. Erickson, Montreal.—p. 817.
50 Fracture in Utero; Pregnancy in Bicornuate Uterus; Typhoid. H. H. McNally, Fredericton, N. B.—p. 820.

40. **Roentgenographic Characteristics of Shrapnel Balls Compared with Bullets and Other Foreign Bodies.**—In about a year at a hospital in France where Pirie was in charge of the roentgen-ray department, 241 plates of shrapnel balls and 242 plates of bullets were made. He says that shrapnel balls may be found entire without any deformity, and every stage of deformity may be met with till an appearance is obtained as if the ball had exploded into small particles. There is one entrance wound only, if the ball is entire, and the wound is rather characteristic. If the ball has struck an external object before striking the patient, it may break into two or more pieces, and the wounds of entrance will then be multiple. When the ball passes into the body it remains there. A shrapnel ball rarely passes through the body and comes out at the other side the way a bullet does. When a shrapnel ball meets a bone it becomes deformed according to the resistance offered by the bone, and some of the lead is left behind, on or near the bone. There were two bones only which Pirie found a shrapnel ball cannot penetrate, namely, the femur in its shaft and the vault of the skull.

The contrast between the damage done by a bullet and that done by a shrapnel ball is very marked when a direct hit is made on the femur or on the skull. A bullet hitting the femur splinters the bone, as it does a glass bottle. At the same time, the bullet breaks into pieces, and its fragments and those of the femur are scattered through the limb, or blown out through the skin as if an explosion had taken place. When a bullet goes through cancellous bone like the head of the femur it may punch a clean hole and cause very little fracturing, but one of the worst fractures is caused when it hits the dense bone of the shaft near its junction with the cancellous bone. In this case the splinters of dense bone are driven into and split up the cancellous bone.

41. **Radical Cure of Inguinal Hernia.**—Starr calls attention to a method of attack on a hernia from within the abdomen when one is operating for other conditions and it is desired to repair a hernia at the one sitting. A pair of curved forceps may be introduced through the internal ring into the sac and the wall of the sac grasped and gradually pulled up into the abdomen until the fundus of the sac becomes completely invaginated. Then the suture with which it is intended to close the abdomen is passed through the neck of the sac and tied to the parietal peritoneum. The suture is then continued along the sac, suturing it to the parietal peritoneum, so that by the time the sac is fully dealt with the suture has reached the cut edges of the abdominal incision and is then carried along, closing the peritoneum. This makes a perfectly satisfactory cure of the hernia, is easily and quickly done, besides saving a second incision. Starr has records of seven cases that have stood the test for two years and more.

45. **Western Provinces are Trying to Provide Hospital Accommodation for Their Rural Sick.**—The question of hospital accommodation and nursing attention for the prairie sick has been the subject of legislation in the twin provinces of Saskatchewan and Alberta. Provision has been made whereby groups of rural and urban municipalities may cooperate in the erection and maintenance of hospitals to serve their people. Each municipality concerned has the power to levy a rate, not exceeding two mills on the dollar, on all assessable property within its borders, for hospital purposes. The managing board is composed of representatives appointed by the councils of the cooperating municipalities, but not necessarily members thereof, and is a body corporate, with powers governing such bodies. The feature which has commended itself more especially to the prairie people in connection with the establishment of these rural hospitals is the immense benefit which they are calculated to confer in maternity cases and emergency sickness.

Broadly speaking, four rural municipalities require a hospital providing accommodation for twenty-five beds, besides quarters for the working staff. The cost of such an institution for building and equipment is estimated at from $1,200 to $1,500 per bed capacity, or between $35,000 and $40,000. Raised by debentures spread over a term of thiry years, and borne by the municipalities in proportion to their assessable value, this capital expenditure represents a very modest increase to the homesteader's taxes. Regarding maintenance, careful investigation suggests that from fifty-five to seventy patients might be expected from each rural municipality, with an average stay in the hospital of fourteen days, at an estimated cost of $2 a day per patient. This would mean that for capital cost, on thirty year debentures, bearing interest at 6 per cent., each rural municipality would have to provide less than $1,000 per annum, while for maintenance, should the maximum estimate be realized and seventy patients receive treatment for fourteen days per patient, $1,960 would be required, or a total cost to each municipality of something like $2,960. As the Saskatchewan government, however, makes a grant of 50 cents per day for every patient receiving

treatment in the hospital, $490 would be received from this source, leaving the rural municipality to provide less than $2,500 to meet its debentures, establish a depreciation fund, and pay the hospital fees of any of its ratepayers or their dependents in the province of Saskatchewan. A 1 mill rate will yield at least $2,750, or $250 in excess of the total amount required as the proportion from any one municipality to finance the whole undertaking of building, equipping and providing free hospital accommodation, and the best of skilled nursing attention for every ratepayer and his dependents who may require it, and that without involving any sense of obligation, as the system is one of cooperative municipal insurance.

Cleveland Medical Journal

September XVI, No. 9

51 What Should Practitioner Know About Wassermann Reaction? A. A. Eisenberg, Cleveland.—p. 587.
52 Prophylaxis of Venereal Disease in Army. H. N. Cole, Cleveland.—p. 601.
53 Indications and Method for Removal of Tonsils. H. G. Sherman, Cleveland.—p. 612.
54 Methodless Technic for Cataract Operation. H. G. Sherman, Cleveland.—p. 616.
55 Gradual Reduction Treatment for Morphin Addictions. M. Loewenthal, Cleveland.—p. 618.

Colorado Medicine, Denver

September, XIV, No. 9

56 Phase of Ovarian Secretion. C. S. Elder, Denver.—p. 234.
57 Effect of Intestinal Stasis on Eye, Especially in Iritis. H. M. Thompson, Pueblo.—p. 236.
58 Acute Poliomyelitis. M. E. Miles, Boulder.—p. 240.
59 Historical Sketch of Clinical Pharmacology of Digitalis. R. E. Morris, Minneapolis.—p. 243.
60 Open-Air Schools. S. A. Russell, Denver.—p. 247.

Florida Medical Association Journal, Jacksonville

September, IV, No. 3

61 Medical Preparedness in Great Drive for Democracy. J. C. Bloodgood, Baltimore.—p. 63.

Indiana State Medical Association Journal, Fort Wayne

September, X, No. 9

62 Report on Venarsen in Treatment of Syphilis. F. A. Brayton, Indianapolis.—p. 339.
63 Nerve Blocking for Relief of Genital and Anal Pruritus. O. Smiley, Indianapolis.—p. 341.
64 Bacteriology of Mastoiditis. H. K. Langdon, Indianapolis.—p. 342.

Iowa State Medical Society Journal, Des Moines

September, VII, No. 9

65 Some of the More Important Advances in Diagnosis and Treatment of Tuberculosis. F. M. Pottenger, Monrovia, Calif.—p. 329.
66 Intestinal Obstruction; Review of Experimental Observation with Practical Suggestions. J. N. Jackson, Kansas City, Mo.—p. 336.
67 Plea for More Rational Therapy in Chronic Endocarditis, Particularly with Decompensation. E. D. McClean and K. L. Johnston, Oskaloosa.—p. 339.
68 Carcinoma; Treatment—Past, Present, Prospective. L. H. Branson, Iowa City.—p. 343.
69 Treatment of Acute Gonorrhea by General Practitioner. C. D. Enfield, Jefferson.—p. 346.

Journal of Cutaneous Diseases, Chicago

September, XXXV, No. 7

70 Case of Multiple Benign Tumor-Like New Growths of Schweninger and Buzzi. W. A. Pusey, Chicago.—p. 582.
71 Electric Cautery in Cutaneous Surgery. H. H. Hazen, Washington, D. C.—p. 590.
72 Mode of Absorption of Mercury in Inunction Treatment of Syphilis. U. J. Wile and J. A. Elliott, Ann Arbor, Mich.—p. 594.
73 Coolidge Tube in Treatment of Nonmalignant Diseases of Skin. H. Fox, New York.—p. 599.

Journal of Immunology, Baltimore

August, II, No. 5

74 *Intracutaneous Reaction in Infectious Diarrhea. H. M. Baker, Boston.—p. 453.
75 Plea for Standardization of Reports of Agglutination Tests. P. Hadley, Rhode Island, N. J.—p. 463.
76 Studies in Anaphylaxis. Reciprocal Relations of Antigen and Antibody within Cell. R. Weil, New York.—p. 469.
77 *Studies in Protein Intoxication. Vascular Lesions in Chronic Protein Intoxication. T. H. Boughton, Chicago.—p. 501.
78 *Fate of Foreign Protein in Acute Anaphylactic Reaction. W. H. Manwaring, Y. Kusama and H. E. Crowe, San Francisco.—p. 511.
79 *Rôle of Hepatic Tissues in Acute Anaphylactic Reaction. W. H. Manwaring and H. E. Crowe, San Francisco.—p. 517.

74. **Intracutaneous Reaction in Diarrhea.**—In a series of thirty-three cases the organism of the infectious diarrhea group was isolated in 55 per cent. of the cases. Agglutinins for the dysentery group were found in 12 per cent. of the cases which were found to be negative from the bacteriologic examination and a characteristic smear, as stained by Gram's method, with a typical history in 25 per cent. of the other cases. The intracutaneous reaction, on the other hand, showed 100 per cent. negative results in the control cases. In cases with history of infectious diarrhea positive reactions were obtained in 85 per cent. of the cases.

77. **Vascular Lesions in Protein Intoxication.**—This paper is a continuation of the work previously reported, with especial reference to the occurrence of vascular lesions in various organs. The materials used and methods employed were the same as those previously described, the object desired being to give each animal as many anaphylactic shocks as possible during the course of the experiment, using egg-white and beef serum. Boughton found that repeated injections of foreign proteins in sensitized guinea-pigs produce lesions of the smaller arteries of liver, kidney, spleen and heart, characterized by degeneration and regeneration of endothelium, edema and fissuring of intima and media, and sometimes splitting of the internal elastic lamina. These lesions are interpreted as being subacute rather than chronic. These lesions are rarely found in the larger arteries, and not at all in the aorta. They are practically absent from veins and capillaries. These lesions occur in 100 per cent. of the livers, 100 per cent. of the spleens, 66 per cent. of the kidneys, and 66 per cent. of the hearts, and were most severe in the livers and least severe in the hearts. The lesions were most severe in animals dying or killed soon after the last injection, and were less frequent and severe in animals killed several weeks after the last injection. Perivascular infiltration was observed in 60 per cent. of the animals, though never severe, but was not found in animals killed more than five weeks after the last injection.

78. **Foreign Protein in Anaphylactic Reaction.**—The validity or nonvalidity of the principal theories concerning the nature of the acute anaphylactic reaction was tested by the authors. Perfusions of isolated organs and tissues with dilute foreign proteins furnished no evidence of a measurable destruction of the foreign protein by the blood serum, nor of an appreciable destruction or binding of the foreign protein by the fixed tissues during the acute anaphylactic reaction.

79. **Hepatic Tissues in Anaphylactic Reaction.**—It was found by Manwaring and Crowe that the detoxicating action of the anaphylactic liver is not due solely to the presence of anaphylactic humoral elements. There is evidently an acquired detoxicating function of the fixed liver cells. The detoxicating action is not due to a removal or destruction of the foreign protein in the perfusion fluid. The liver of a normal guinea-pig, repeatedly perfused with a mixture of foreign protein and defibrinated normal or anaphylactic blood, produced little or no change in the toxicity of the perfusion mixture on subsequent tests with isolated anaphylactic lungs. The liver of an anaphylactic guinea-pig, similarly perfused, usually rendered the perfusion fluid almost completely nontoxic for these lungs. Evidence points to the explosive formation or liberation of vasodilator and bronchodilator substances by the sensitized liver cells.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

September, X, No. 3

80 *Effect of Caffein on Reaction to Carbon Dioxid of Normal Human Respiratory Mechanism. G. P. Grabfield and J. H. Means, Boston.—p. 159.
81 *Certain Antagonists of Pilocarpin. F. Ransom, London.—p. 169.
82 *Pharmacologic Studies of Ipecac Alkaloids and Some Synthetic Derivatives of Cephaelin. Studies on Emetic Effect and Irritant Action. A. L. Walters, C. R. Eckler and E. W. Koch, Indianapolis.—p. 185.

83 *Method for Standardization of Thyroid Preparations. J. M. Rogoff, Cleveland.—p. 199.
84 *Influence of Oxygen on Inflammatory Reactions. S. Amberg, A. S. Loevenhart and W. B. McClure, Madison, Wis.—p. 209.

80. **Effect of Caffein on Respiration.**—No significant change was found by Grabfield and Means in the rate of reaction to carbon dioxid as a result of taking various doses (small and large) of caffein alkaloid, by mouth, in two normal human subjects.

81. **Certain Antagonists of Pilocarpin.**—The net result of Ransom's experiments is to make it clear that the chronotrope and inotrope actions of pilocarpin are fundamentally distinct. They are both vagal effects but different groups of vagal fibers are concerned in their production and hence one action can be antagonized while the other remains intact. Atropin paralyses vagal endings and hence entirely antagonizes the heart actions of pilocarpin. Strontium, digitalis, agaricin and saponin, which, without affecting the vagus, have a positive inotrope action on the frog's heart, antagonize the negative inotrope action of pilocarpin but leave the negative chronotrope effect unimpaired. Epinephrin and caffein antagonize both the actions of pilocarpin, not because they affect either of the two sets of vagal fibers, but because they produce effects the reverse of those which stimulation of the two vagal groups brings about.

82. **Pharmacology of Ipecac Alkaloids.**—The experiments reported by the authors demonstrated that in cats the emetic dose of emetin hydrochlorid is approximately twice that of cephaelin hydrochlorid, and that the higher homologues of this series decrease in emetic power very much in the same ratio as they do in toxicity, as reported in a previous paper. Furthermore, it has been shown that the hydrochlorid, hydrobromid and hydro-iodid of emetin vary only slightly in their emetic power, but that the hydro-iodid of cephaelin iso-amyl ether, due to its relative insolubility, is about one half as emetic as the hydrobromid or hydrochlorid of cephaelin iso-amyl ether and only one sixth as emetic as emetin hydrochlorid. When tested on the conjunctiva of rabbits, emetin and cephaelin are the most irritant of this series and cephaelin iso-amyl ether is least irritating. When injected intramuscularly in rabbits cephaelin iso-amyl ether is the most irritant while the difference between the other less irritant members of the series is not marked. Cephaelin propyl ether phosphate gives no more than a slight local reaction when injected hypodermatically into persons, while cephaelin iso-amyl ether salts cause severe pain, soreness and local inflammation.

83. **Standardization of Thyroid Preparations.**—A method is described by Rogoff in which the specific action of thyroid on tadpoles is used to assay the physiologic value of commercial thyroid preparations. Of seven products purchased in retail drug stores, two indicated about 20 per cent. more activity than a standard preparation, two were equal in value to the standard, one somewhat more than 50 per cent. of the standard, one less than 50 per cent., and one was a practically worthless preparation—being only about 10 to 20 per cent. of the value of the standard.

84. **Influence of Oxygen on Inflammatory Reactions.**—Amberg and his associates found that the intravenous injection of the sodium salts of o-iodoso-benzoic acid and o-iodoxy-benzoic acid inhibits the mustard oil reaction of the rabbit conjunctiva as well as that of the skin. No other visible changes in the organism accompany this inhibiting action. Other substances containing chemically active oxygen, such as the sodium salts of diphthalic peroxid, iodic and periodic-acids have an inhibiting action on the mustard oil inflammation. It seems reasonable to ascribe the inhibiting action of these substances to the chemically active oxygen. Exposure of rabbits to atmospheres with reduced partial pressure of oxygen did not have any marked effect on the intensity of the intracutaneous mustard oil reaction. Intravenous injections of sodium cyanogen seem capable of intensifying the conjunctival mustard oil reaction under proper conditions. Within certain limits an influence on tissue oxidations seems to determine an inhibition or intensification of the response to inflammatory stimuli. It seems possible to alter the character of the conjunctival mustard oil reaction by intravenous injections of substances, such as sodium hypochlorite. Irritation produced elsewhere in the organism, as by intraperitoneal injections of kaolin, animal charcoal, mustard oil, may exercise an inhibiting influence on the conjunctival mustard oil reaction of the rabbit.

Journal-Lancet, Minneapolis

September 15, XXXVII, No. 18

85 Diagnosis of Gallbladder Disease. W. H. Bodenstab, Bismarck, N. D.—p. 591.
86 Acute Empyema of Gallbladder. W. A. Dennis, St. Paul.—p. 595.
87 Medical Preparedness. F. A. Spafford, Flandreau, S. D.—p. 599.
88 Tuberculous Peritonitis. M. P. Graham, Carrington, N. D.—p. 605.
89 Prescribing Lenses After Use of Cycloplegics. D. L. Tilderquist, Duluth.—p. 610.
90 Case of Diverticulum of Urinary Bladder with Postmortem Observations. E. H. McIntyre, Virginia.—p. 614.

Medical Record, New York

September 22, XCII, No. 12

91 Diabetes Insipidus in Children. R. D. Moffett and M. Greenberger, New York.—p. 487.
92 Progress in Surgical Therapeusis. A. Vander Veer, Albany.—p. 495.
93 Examination of Patients Suspected of Being Insane. W. R. Dunton, Jr., Towson, Md.—p. 497.
94 Technic of Transduodenal Lavage in Office Practice with or without Oxygen Insufflation. M. E. Jutte, New York.—p. 499.
95 New Method for Determination of Glucose Content in Urine. J. J. Gurtov, New York.—p. 502.
96 Some Ancient Health Laws of Jews. J. H. Marcus, Atlantic City, N. J.—p. 503.
97 War and Venereal Diseases. E. K. Tullidge.—p. 505.

Medicine and Surgery, St. Louis

September, I, No. 7

98 Mental Pitfalls in Industry—and How to Avoid Them. J. Taft, New York.—p. 679.
99 Opportunities Which Industrial Hygiene Offers to General Practitioner and to Public Health Officer. L. I. Harris, New York.—p. 686.
100 Hygienic Survey of Cigar Manufacturing in Philadelphia. H. F. Smyth, P. H. Miller and T. G. Miller, Philadelphia.—p. 698.
101 Relation of Physician to Some Problems of Modern Industry. F. D. Patterson, Harrisburg, Pa.—p. 719.
102 Psychopathic Employee: Problem of Industry. M. C. Jarrett, Boston.—p. 727.
103 Industrial Eczema. G. L. Apfelbach, Chicago.—p. 742.
104 Relation of Occupation to Disease. E. Miltimore, New York.—p. 750.
105 Trinitrotoluene Poisoning. A. Hamilton, Chicago.—p. 761.
106 American Chemist and Occupational Diseases. C. Baskerville, New York.—p. 767.
107 Some Phases of Medical Supervision of Employees. W. E. Post, Chicago.—p. 772.
108 Tuberculosis: Industrial Accident. J. B. Hawes, 2d, Boston.—p. 777.
109 Minute Foreign Bodies in Wounds. D. H. Stewart, New York.—p. 780.

New York Medical Journal

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110 Blood Pressure. R. F. Ives, New York.—p. 533.
111 Physical Measures for Treatment of Abnormal Blood Pressure. W. T. Johnson, Philadelphia.—p. 539.
112 Seasickness and Internal Ear Stimulation. L. Fisher, Philadelphia.—p. 542.
113 Rheumatism. H. K. Craig, Washington, D. C.—p. 546.
114 Goiter; Analysis of One Hundred and Twenty-Five Cases. L. E. Watson, Chicago.—p. 549.
115 Sinusitis in Children. K. A. Phelps, New York.—p. 550.
116 Bilateral Choked Disk Following Thyroidectomy. F. Krauss, Philadelphia.—p. 552.
117 Hygiene of Rural Schools. J. A. Nydegger, Baltimore.—p. 554.
118 Medical Department of United States Army. W. W. Reno, Fort Riley, Kan.—p. 537.
119 Disposition of Excreta in Trenches. T. H. Goodwin.—p. 558.

Northwest Medicine, Seattle

September, XVI, No. 9

120 Glycosuria and Pregnancy. T. Torland, Seattle.—p. 257.
121 *Syncytioma Malignum. Review of Literature; Report of Case. R. R. Anderson, Salt Lake City.—p. 259.
122 Radicalism or Conservatism in Treatment of Puerperal Infection. T. W. Buschmann, Seattle.—p. 263.
123 *Case of Smallpox in Utero. W. A. Rothwell, Kendrick, Ida.—p. 265.
124 Rôle of Gynecology in Care of Insane. A. M. Smith, Tacoma.—p. 265.
125 Some Wassermann Test Observations. O. J. West, Seattle.—p. 268.

126 Value of Routine Wassermann in One Thousand Consecutive Cases as They Come to Urologist. W. R. Jones, Seattle.—p. 272.
127 Focal Infection from Surgical Point of View. P. Rockey, Portland, Ore.—p. 274.
128 Focal Infections Complicating Eye. O. M. Babbitt, Portland, Ore. —p. 276.
129 Allen Treatment of Diabetes. R. W. Stearns, Medford, Ore. —p. 279.
130 *Case of Atypical Thyroid Disease, Formes Fruste. M. G. Sturgis, Seattle.—p. 281.

121. **Syncytioma Malignum.**—Anderson reports a case from which it would not appear that it is always necessary to do a complete hysterectomy in cases of malignant syncytioma. He believes that most authorities are too radical and that each case must be handled according to the conditions that exist at the time of operation. From the fact that metastasis takes place through the blood, it would seem that, if metastasis had occurred at all, a complete hysterectomy would give little more chance of permanent cure than a resection of the macroscopic growth.

123. **Smallpox in Utero.**—A woman, pregnant about three months, was sleeping in the same bed with her husband who was found to have smallpox. She was immediately removed to another room and she and her two children and a man and woman who were taking care of the family were successfully vaccinated. The woman had a typical reaction to the vaccine virus. The quarantine was raised in six weeks. One month afterward Rothwell was called to see her. On examination he could find no signs of life in the fetus and the os uteri was dilated about the size of a quarter. The vagina was aseptically packed with gauze and at 6 o'clock next morning a six or six and a half months mummified fetus was expelled. Life must have been extinct for some time, as the abdomen was discolored and distended, and the abdominal muscles and integument were very thin and fragile. What was most noticeable, however, was the presence of round, yellow, slightly pitted scars about the size of the end of a lead pencil, distributed over the whole surface of the body, where the scabs had become detached in utero. Also the vesicles and pustules that invariably accompany a severe case of variola vera were present. The mother had never a sign of a papule, vesicle or pustule but she has a normal vaccination scar.

130. **Atypical Thyroid Disease.**—Sturgis' case presents the unusual spectacle of the symptoms of a preexisting hyperthyroidism overlapping and overshadowing a well developed hypothyroidism, and completely dominating the clinical picture. Compared with them, those arising from hyposecretion seemed almost inconsequential, and yet the first examination disclosed the fact that the gland was almost entirely atrophied and had ceased to functionate. That the symptoms of hyperthyroidism had not only persisted but had even increased seemed to warrant the conclusion that the thyroid was only partly at fault. The blood pressure was amazing. For 125 mm. the sounds fairly snapped and they were audible for 200 mm.

Pennsylvania Medical Journal, Athens

September, XX, No. 12

131 Portal of Entry and Route of Infection in Tuberculosis in Children. O. Klotz, Pittsburgh.—p. 811.
132 Tubercular Conditions of Ear, Nose and Throat. N. P. Stauffer, Philadelphia.—p. 817.
133 *Metabolism and Successful Treatment of Rheumatoid Arthritis. R. Pemberton, Philadelphia.—p. 820.
134 *Blood Pressure from Standpoint of Clinician. F. J. Dever, Philadelphia.—p. 825.
135 Physician and Referee. P. W. Houck, Harrisburg.—p. 828.
136 Relation of Physician to Some of Problems of Modern Industry. F. D. Patterson, Harrisburg.—p. 832.
137 Maternity Insurance. L. Lehrfeld, Philadelphia.—p. 836.
138 Case of Snake Bite, Treatment. A. S. Daggette, Pittsburgh.—p. 838.

133. **Treatment of Rheumatoid Arthritis.**—The facts emphasized by Pemberton are, first, that in rheumatoid arthritis it is necessary to reduce the carbohydrates by an important amount, varying with each case; second, that it is necessary to reduce the proteins considerably, but relatively not so much; and third, that, although the fats cannot be handled with impunity, they may be used with caution to increase the caloric value of the ingested food and meet in some degree the loss of weight. Experiments have shown that some patients were carried through to convalescence with an actual gain of weight by using fat in quantities sufficient to equal or exceed the caloric deficit.

134. **Blood Pressure from Standpoint of Clinician.**—Dever urges that a knowledge of blood pressure is an aid in diagnosis, especially in the cardiovascular-renal diseases. An excellent idea of the functional capacity of the myocardium may be obtained and in acute and chronic disease evidence of weakening of the heart thus may be obtained before other signs of circulatory weakness is evident. The blood pressure is a guide in the treatment of certain diseases, notably chronic renal insufficiency as found in chronic interstitial nephritis. The diastolic pressure should be recorded as well as the systolic pressure, as the latter alone is insufficient to reveal all that is to be ascertained by a study of the blood pressure.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

September, XXV, No. 9

139 Rôle of Newer Chemistry of Blood in Diagnosis and Treatment. R. B. H. Gradwohl, St. Louis.—p. 209.
140 Some Rare Surgical Conditions. J. J. Link, St. Louis.—p. 217.
141 Fractures of Spine. R. H. Hull, Oklahoma City.—p. 223.
142 Examination of Larynx and Bronchi by Means of Laryngoscope. W. E. Dixon, Oklahoma City.—p. 229.

Tennessee State Medical Association Journal, Nashville

September, X, No. 5

143 Angioneurotic Edema—Visceral Crisis; Report of Case. J. L. McGehee, Memphis.—p. 179.
144 Mental and Physical Survey of Retarded Schoolchildren. R. H. Perry, Nashville.—p. 182.
145 Etiology of Diseases of Accessory Sinuses. J. M. Hogshead, Chattanooga.—p. 186.
146 Roentgen Ray Treatment of Skin Diseases. S. S. Marchbanks, Chattanooga.—p. 188.
147 Intussusception; Report of Cases. W. F. Clary, Memphis.—p. 190.
148 Left-Sided Appendicitis. J. L. Crook, Jackson.—p. 193.
149 Some Clinical Features of Early Tuberculosis. G. F. Aycock, Nashville.—p. 195.
150 Nitrous Oxid-Oxygen Analgesia in Labor. R. Patterson, Knoxville. —p. 212.
151 Surgery of Prostate. T. G. Pollard, Nashville.—p. 214.

Texas State Journal of Medicine, Fort Worth

September, XIII, No. 5

152 Anatomic Routes for Operations on Long Bones of Upper Extremity. J. E. Thompson, Galveston.—p. 170.
153 Patent Medicine Evil. F. J. Mayer, Opelousas, La.—p. 174.
154 Diagnostic Value of Leukocytosis. W. W. Waite, El Paso.—p. 178.
155 Normal Differential Leukocytic Count as Determined by Study of One Hundred and Fourteen Adults. M. D. Levy, Galveston. —p. 179.
156 Frontal Sinusitis; Report of Cases. W. D. Jones, Dallas.—p. 182.
157 Conservative Treatment of Sinus Infections. L. K. Beck, San Antonio.—p. 184.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

August, XI, No. 2

1 *Periodicity of Microfilaria Nocturna; Report of Case of Filariasis. W. Yorke and B. Blacklock.—p. 127.
2 *Treatment of Malaria. Intravenous Injections of Quinin Bihydrochlorid. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and C. F. Cooper.—p. 149.
3 *Id. Intramuscular Injections of Amylopsin and Trypsin in Simple Tertian Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and C. F. Cooper.—p. 165.
4 *Id. Intramuscular Injections of Quinin Alkaloid in Simple Tertian Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie, C. F. Cooper and H. F. Carter.—p. 173.
5 *Occurrence of Intestinal Protozoa in Nondysenteric Cases. A. M. Smith and J. R. Matthews.—p. 183.
6 Value of Concentrating Cysts of Protozoal Parasites in Examining Stools of Dysenteric Patients for Pathogenic Entamebae. H. F. Carter and J. R. Matthews.—p. 195.
7 *Some Results Obtained by Heiser's Treatment of Leprosy in Nigeria. H. S. Coghill.—p. 205.

1. **Periodicity of Microfilaria Nocturna.**—In the case cited by Yorke and Blacklock blood films made during the daytime were either negative or contained only an odd microfilaria,

whereas in those prepared at night microfilariae were found in considerable numbers. Thick dehemoglobinized films were stained with hematin, and the morphology of the parasite examined. The larvae were identified as those of *Filaria bancrofti*. A series of observations was made with the object of studying the periodicity of the microfilariae in the cutaneous blood. The number of larvae per cubic centimeter of cutaneous blood was estimated every two hours for a period of twenty-four hours, on two occasions. Furthermore, the number of larvae per cubic centimeter of venous blood (median basilic vein) was determined. It was found that obstruction to the passage of *Microfilaria bancrofti* through the cutaneous vessels occurs at all times of the day and night, but is at a minimum at the end of the period of bodily activity. Although this obstruction aids in the piling up of the larvae in the cutaneous vessels, it is in no way responsible for the nocturnal periodicity.

The nocturnal periodicity is primarily dependent on periodic variations in the arterial supply of larvae to the cutaneous vessels. By reversing the hours of sleep and activity, cutaneous immigration becomes diurnal instead of nocturnal. The change, however, takes place gradually; after the periods of sleep and activity had been reversed for four days the time of maximum concentration of the larvae in the cutaneous vessels had only been set back six hours (from midnight to 6 a. m.); when reversal of the hours of sleep and activity had lasted for eleven days the time of maximum cutaneous concentration had been changed from midnight to midday. The number of microfilariae, as judged from the maximum concentration in the cutaneous blood, remained at practically a constant level during the period of observation. The number of microfilariae present in 100 c.c. of urine varied greatly at different times during a twenty-four-hour period. These variations, which were irregular and gave no indication of either a nocturnal of diurnal periodicity, are explained on the assumption that the majority of the microfilariae escaped into the urine with the blood. Graphs depicting the number of larvae per cubic centimeter of urinary blood reveal the existence of a regular periodicity corresponding to that of the larvae in the cutaneous blood, with the difference that the time of maximum concentration was several hours later. The number of microfilariae in the renal and vesical vessels exhibits a nocturnal periodicity analogous to that in the cutaneous vessels.

2. **Quinin Bihydrochlorid in Treatment of Malaria.**—Single injections of quinin bihydrochlorid were given in eight cases of simple tertian malaria. In seven of these the amount of quinin injected was 15 grains, in the other, 10 grains. The results were similar in all cases. The temperature fell to normal in one to three days, and parasites disappeared from the cutaneous blood in two to five days. Six of the eight patients relapsed. Parasites reappeared in eight to fourteen days. Febrile paroxysms recurred on an average in fifteen days (minimum 10, maximum 20). Of the remaining two patients, one was given quinin orally on the fourth day, and the other died of cerebral hemorrhage of undetermined nature on the tenth day.

Multiple injections were given in thirteen cases, five in one case and six in twelve. The injections were given on Mondays, Wednesdays and Fridays. As a rule, 10 grains were given at each injection, but on a few occasions 15 grains. In one patient the treatment did not cause the disappearance of parasites from the blood, but the febrile paroxysms were controlled. In another case the temperature fell to normal after the first injection, parasites disappeared from the blood after the second injection, and there was no relapse for an observation period of two and a half months. In the remaining eleven cases the temperature fell to normal after one to three injections; the parasites disappeared from the blood after one to four injections. All of the eleven patients relapsed. Parasites reappeared in eight to eighteen days. Febrile paroxysms recurred on an average of eleven days.

Single injections were given in two cases of malignant tertian malaria: 15 grains in one case, 10 grains in the other. In neither did the treatment cause the parasites (trophozoites or gametes) to disappear from the blood. Multiple injections were given in five cases; four in one case, and six in four. The injections were given on Mondays, Wednesdays and Fridays; 10 grains on every occasion. In each case the treatment was administered during an apyrexial period. Speaking generally, the treatment did not cause the parasites (trophozoites or gametes) to disappear from the cutaneous blood. In a series of 127 injections, thrombosis occured in four patients. There was no other symptom worthy of note.

3. **Amylopsin and Trypsin in Treatment of Tertian Malaria.**—Intramuscular injections of amylopsin and trypsin proved to be of no value in the treatment of ten cases of acute simple tertian malaria. Some swelling and tenderness occurred at the site of injection. On this account, and because the paroxysms were not checked, the majority of the patients refused to have more than one or two injections.

4. **Quinin Alkaloid in Treatment of Tertian Malaria.**—The solution used by the authors for this purpose was made in the following way: 1 gm. of quinin alkaloid was dissolved in 1 c.c. of 90 per cent. alcohol, and the volume made up to 3 c.c. with sesame oil. By this means a clear viscid solution capable of being easily injected was obtained, 1 c.c. containing approximately 5 grains of the alkaloid. The injection brought about: (1) A cessation of febrile paroxysms. The temperature usually fell to normal within four days of the first injection. (2) Disappearance of parasites (trophozoites and gametes) from the cutaneous blood usually in one to two days. Thirty-one of the thirty-eight patients treated relapsed. Parasites reappeared on an average in eighteen days. Febrile paroxysms recurred on an average in twenty days. The remaining seven patients had not relapsed within an observation period of two months.

A comparison of these results with those recorded with the use of a very soluble salt of quinin, the bihydrochlorid, shows that the therapeutic action of the insoluble alkaloid is in no way inferior to that of the soluble salt. Subcutaneous injections of this solution resulted in sloughing. Intramuscular injections of 3 to 4 c.c. resulted in slight pain at the time of injection; in larger doses, 6 c.c., the immediate pain was more severe and pain recurred some twenty-four to forty-eight hours later. There was no abscess formation or other ill effect. For several days after injection a slight diffuse swelling was appreciable at the site of injection; this, however, disappeared entirely in the course of a few days.

5. **Occurrence of Intestinal Protozoa in Nondysenteric Cases.**—Of 200 nondysenteric patients in the hospital for various diseases 34.5 per cent. were found to be infected with various protozoa. *E. histolytica* was discovered in fifteen cases (7.5 per cent.). One hundred cases were malaria and among these six infections with *E. histolytica* were detected. There were forty-two cases with a history of dysentery and 158 cases with no history of dysentery. Of the former 7.1 per cent. were found positive to *E. histolytica*, and of the latter 7.6 per cent. Of 142 patients who had been to tropical or subtropical regions, 11, or 7.7 per cent., were found infected with *E. histolytica*. The remaining fifty-eight patients had been to France only, and four, or 6.9 per cent., were discovered to be infected with this parasite. The great majority of the cases (123) had only two examinations each.

7. **Heiser's Treatment of Leprosy.**—The method of treatment of leprosy described by Heiser has been tried by Coghill with some of the inmates of the Yaba Leper Asylum. The treatment was begun in May, 1916, so that it is as yet too soon to make a complete report, more particularly as all the patients are old standing cases. The oil mixture used was that recommended by Heiser: chaulmoogra oil, 60 c.c.; camphorated oil, 60 c.c., and resorcin, 4 grains. The mixture was sterilized by boiling, and 2 c.c. injected intramuscularly into the buttock, were given as an initial dose. After the lapse of one week, 3 c.c. were given, and this dose was increased by 1 c.c. per week until 8 c.c. were being administered. Beyond this amount some discomfort was complained of, so that the procedure finally adopted was to inject 6 c.c. twice a week. This dose was well tolerated and every case responded to treatment. The most rapid and obvious effect was the healing of ulcers, many of them large and deep, and

of many years' duration. Softening, then absorption of the nodules, fading of the maculae and the return of sensation were also observable, even to the patients themselves.

British Medical Journal, London

September 8, II, No. 2958

8 Educational Number, Sessions 1917-1918.—p. 309.

Edinburgh Medical Journal

September, XIX, No. 3

9 Treatment of Toxemia of Common Infections in Children by Intravenous Injection of Eusol. J. L. Smith, J. Ritchie and T. Rettie.—p. 143.
10 *Sphere of Arthroplasty in Treatment of Ankylosis. A. Thomson. —p. 176.
11 Carcinoma of Pelvic Colon; Resection. Three Years Later, Recurrence in Rectum: Colostomy. One Year Later, Carcinomatous Stricture, Small Intestine: Resection. Carcinoma at Colostomy Opening: Death Six Years After First Operation. J. W. Dowden.—p. 181.

10. **Sphere of Arthroplasty in Treatment of Ankylosis.**—While arthroplasty may be brilliantly successful in joints ankylosed by purely traumatic lesions, Thomson says, it is liable to fail in points ankylosed as a result of bacterial infection. The two great causes of failure are found to be (1) either a recrudescence of the original infection, that is, tuberculosis and dormant infections of gunshot injuries, interfering with the formation of the false joint, or (2) an increased activity of the bone forming tissues leading to a return of the ankylosis.

Journal of Tropical Medicine and Hygiene, London

September 1, XX, No. 17

12 Scarlet Fever-Like Eruptions in Tropics. A. J. Chalmers and A. Innes.—p. 193.
13 Tropical Diseases Met with in Balcanic and Adriatic Zones. A. Castellani.—p. 198.

Medical Journal of Australia, Sydney

August 4, II, No. 5

14 *Chronic Ulcer of Stomach and Duodenum; Surgical Treatment and End Results. H. B. Devine.—p. 89.

August 11, No. 6

15 Localization in Roentgenography. C. W. Joy.—p. 113.
16 *Pathology and Treatment of Barcoo Rot (Veld Sore). C. J. Martin.—p. 118.
17 Strangulation of Pylorus. C. Friend.—p. 120.

14. **Surgical Treatment of Ulcer of Stomach and Duodenum.**—The following deductions are drawn by Devine from his experience with thirty-eight cases. Gastro-enterostomy only for a lesser curvature ulcer may result in a failure or cure. Wide resections of an ulcer almost to greater curvature unassociated with pyloric stenosis resulted in all cases in a permanent cure. Postoperative distress was noticeably absent, and no gastro-enterostomy was necessary. Cases of postpyloric or prepyloric ulcers with marked stenosis did well with simple gastro-enterostomy. The autoplastic rectus sheath graft with gastro-enterostomy can be used with success in some cases of prepyloric and postpyloric ulcer in cases in which there is no stenosis, and especially in which there is a tendency to bleed. Stomach operations lend themselves to stage operations, and often this is the surest way for a successful termination of the surgical treatment. The surgical treatment should fit exactly the set of surgical pathologic conditions present, and the surgeon cannot have all this knowledge without a careful and thoughtful preoperative roentgen ray and clinical examination.

16. **Treatment of Barcoo Rot (Veld Sore).**—This disease is characterized by spreading superficial ulcers on the backs of the hands, extensor surface of the forearms and, to a less extent, on the dorsa of the feet and on the shins. The ulceration resembles that met with among bushmen in the backblocks of Australia (during the dry season), and is known locally as "Barcoo rot." The first sign is usually a bleb or blister containing thin, watery pus and surrounded by an area of slightly inflamed skin. The blister may be the size of a sixpense, or even larger, but before it reaches this size it is generally broken. The denuded surface shows little tendency to heal, but slowly extends at its margins, at the same time deepening until there are no more epithelial structures left. The ulcer, however, remains shallow, and it is unusual for the fibrous layer of the skin to be destroyed, unless it becomes infected with virulent staphylococci. The glands are not inflamed unless secondary infection occurs, and there are no constitutional symptoms. When healing has occurred, areas of glossy skin, more or less denuded of hairs and sweat glands, are left. Cicatrization does not occur unless the true skin is destroyed. Infection of fresh areas of skin in the neighborhood is usual, so that the patient has several ulcers of different ages. The disease in its minor forms is extremely annoying, and when the ulcers have become large, incapacitating. In hospital the ulcers generally heal up slowly under any sort of wet antiseptic dressing, but are very difficult to deal with in the field. Acting on the idea that infection of the hair follicles is largely responsible for the continuance of the ulcerative process, Martin removed the hair or hairs traversing the early blebs from the secondary infection, and found that these healed straight away. Next, working on the principle employed to restrict a bush fire, by burning an area in front of it, he attacked the larger ulcers, removing the hairs from their base, and around their margins and was pleased to find that the ulcerative process was stayed, and healing commenced at once.

Annales de Gynécologie et d'Obstétrique, Paris

July-August, LXXII, No. 7-8, pp. 577-640

18 *The Depopulation Problem. C. Richet.—p. 577.
19 *Welfare Work for Children at Havre during the War. A. Loir and H. Legangneux.—p. 609.
20 *Technic for Walling Off the Pelvis after Operations. H. Chaput. —p. 620.
21 Case of Cyst of the Urachus. G. Chavannaz.—p. 630.

18. **The Declining Birth Rate.**—This is one of the reports made by a committee appointed by the Académie de médecine to suggest measures to arrest the depopulation of France. Stress is laid on the principle of financial aid to the child up to the appearance of the twentieth tooth. Richet declares that France is dying unless heroic measures are taken. It is sound finance, he reiterates, to pay out possibly $400 for a little human being, who in the course of a few years will be earning an income of at least that every year. The state, society and the nation will all be the gainers financially.

19. **Child Welfare Work at Havre During the War.**—This report from the Havre board of health emphasizes that the birth rate has declined and the infant death rate risen during the war, principally from the mothers being obliged to leave their infants to work in the factories. Factory work is fatiguing for women, especially for nursing mothers. The help as now given has too much the aspect of charity. The mothers with dirty houses are looked after better than the self-respecting who are too proud to appeal for aid. The suggested remedy is that the financial aid should be given to all the nursing mothers alike, irrespective of their pecuniary condition. This would insure it to all who need it and would stop breeding professional beggars.

20. **Walling Off the Pelvis.**—Chaput describes the various methods with which he walls off the pelvis from the abdominal cavity after operations, or walls off one part from another, in both women and men. This allows the pus accumulating in the pelvis to be drained into the vagina, or rectum in man, after pushing up the small intestine and omentum out of the way and interposing a solid barrier against their sliding down again. The barrier can be total, transverse or vertical. He fastens the sigmoid colon to the superior strait and to the suprapubic peritoneum. This transforms the pelvis into a single cavity with smooth walls, with no crevices to retain pus, easy to drain and to disinfect. The thickness and the high position of the colon roof practically guarantees against propagation of infection upward to the abdomen.

Bulletin de l'Académie de Médecine, Paris

August 21, LXXVIII, No. 32, pp. 119-150

22 *The Depopulation Problem. Committee Report. A. Pinard.—p. 121.
23 *Comparative Resistance of Paratyphoid B Bacillus and Colon Bacillus in Drinking Water. G. Daumézon.—p. 146.
24 *Syphilis and Masculinity. Girauld and Tissier.—p. 148.

22. **The Declining Birth Rate.**—Pinard presents the report of the committee which has been studying means to remedy the depopulation of France. It fills twenty-six pages, but no vote was taken. Among the principles advocated is that families which have no or few children must be made to aid those that have many. Also that the state should feel that it owes a debt to the woman who bears a child. Also that birth control measures are injurious for the woman as well as for the nation, and that the state should forbid and repress the birth control propaganda as a growing danger.

23. **Survival of Paratyphoid B Bacilli in Drinking Water.**—Daumézon reports that both the colon bacillus and the paratyphoid B long resist the antagonism of other germs in water when sheltered from the light by turbidity of the water. The paratyphoid B seems less resistant than the colon bacillus, but still it seems able to pass still viable through the filtering and other media that do not arrest the colon bacillus.

24. **Syphilis and Masculinity.**—Girauld states that in his service during a recent period 201 syphilitic women were delivered of 119 boys and eighty-two girls. Of the sixty-four living and apparently healthy children, forty-three were boys and only twenty-one girls.

Bulletins de la Soc. Méd. des Hôpitaux, Paris

June 28, XLI, No. 21-22, pp. 773-806

25 *Hemoglobinuria in Malaria Contracted in Macedonia. P. A. Delille and others.—p. 773.
26 *Emetin in Treatment of Liver Abscess. P. A. Delille and others.—p. 777.
27 *Characteristics of Relapsing Fever Contracted in Macedonia. P. A. Delille and others.—p. 778; Portocalis.—p. 780.
28 *Cancer and Traumatism. L. Moreau.—p. 783.
29 Mumps Orchitis Complicated with Colon Bacillus Abscess. M. Troude.—p. 785.
30 *Paratyphoid B of Alimentary Origin. F. Lévy.—p. 787.
31 *Pneumococci and Meningococci in Meningitic Fluid. A. Netter and M. Salanier.—p. 789.
32 Nongonorrheal Urethritis with Epididymitis, Caused by Pseudodiphtheria Bacilli. L. Ramond, and others.—p. 797.
33 *Meningeal Hemorrhage in Soldiers on Active Service. P. Nobécourt.—p. 802.

25. **Hemoglobinuria in Macedonian Malaria.**—Delille and his co-workers state that the tropical character of the malaria contracted by the French troops in Macedonia is evidenced particularly by the relative frequency of hemoglobinuria. The mortality was high, nearly 30 per cent. The malaria was usually of long standing, six months or more, and cold weather seemed to be a factor in its appearance. The findings indicate massive destruction of blood corpuscles, probably in the blood stream, as the first phase. It may be accompanied by hemorrhages from the mucosa. The hemoglobin thus liberated is transformed into bile pigments, the excess passing off through the kidneys. The hemoglobin may be in such quantities that it clogs the kidneys and the patient may succumb to anuria. In the more fortunate cases, the urine washes out the hemoglobin plugs. There was no death from anemia, and the corpuscles regenerated extremely rapidly.

26. **Emetin for Suppuration in the Liver.**—The emetin reduces the pain and fever in less than forty-eight hours whether the hepatitis is in an incipient phase or an abscess has formed. There may be no history of dysentery in the antecedents or the patient has forgotten it, but the intestines never forget it. Necropsy in fatal cases of liver abscess may reveal lesions suggesting chronic amebic dysentery though they failed to induce appreciable symptoms.

27. **Relapsing Fever in Macedonia.**—There was only one death among the fifty cases under observation. The onset was stormy, the liver always involved, with more or less jaundice in 90 per cent. of the cases. Lively headache and a suggestion of the Kernig sign and lymphocytosis were common. A second relapse occurred only in 10 per cent. and it was brief. The disease is essentially mild; only two deaths were known, both occurring with symptoms of acute suprarenal insufficiency, and a retrospective diagnosis of Addison's disease was manifest.

28. **Cancer and Trauma.**—Moreau describes an epithelioma developing in the parotid gland in a colonial of 42. He had been struck in this region in 1914 by a fragment of a shell but there was no superficial wound or fracture. There had never been any previous glandular trouble in the neck, but the man had a history of malaria, typhoid and a liver abscess. The cancer recurred after extirpation and radiotherapy.

30. **Paratyphoid B from Meat Poisoning.**—The small epidemic was traced to insufficiently cooked ham. The bacilli were found in the ham but they were also found on the hands of one of the cooks who proved to be a carrier.

31. **Mixed Infection in Meningitis.**—Netter and Salanier now have a record of twenty-two cases of meningococcus meningitis in which pneumococci were found also in the spinal fluid. This sustains their previous plea for combined antiserum treatment against both these germs.

33. **Meningeal Hemorrhages in Soldiers.**—Nobécourt remarks that meningeal hemorrhage is rather common in soldiers, as he has encountered it in three cases out of a total series of 2,660 patients in the contagious disease hospital in his charge not far from the front. Meningitis formed 8.3 per cent. of the total series. No cause for the hemorrhage was found in the two cases. In one of these, after a few days of headache, convulsions developed with aphasia and strabismus, and progressive flaccid paralysis followed. The onset was more insidious in the other case, with symptoms revealing tuberculous meningitis, fatal in a few days. In the third case the onset was sudden coma, the neck and legs stiff, with death in sixteen hours. Lumbar puncture disclosed meningeal hemorrhage in each case. The hemorrhage was profuse in the meninges and ventricle, as also in lungs and spleen, with intense congestion of kidneys and suprarenals, but no cause for this could be discovered, no inflammatory lesions, and the extravasated reds were of normal shape.

Lyon Médical

August, CXXVI, No. 8, pp. 349-396

34 *Mercurial Stomatitis; Pathogenesis, Prophylaxis and Treatment. M. Favre.—p. 349.
35 *Castor Oil as Lubricant for Wounds and Dressings. (L'huile de ricin.) L. Revillet.—p. 355.
36 *War Enteritis. A. Mollière.—p. 357.

34. **Mercurial Stomatitis, Treatment and Prophylaxis.**—Fávre's extensive experience has demonstrated, he says, that the stomatitis which develops under mercurial treatment is identical in every respect with Vincent's ulceromembranous stomatitis, and treatment and prophylaxis should be the same for both. Vincent's spirillum is inevitably present, and if this spirillum is exterminated, the affection rapidly subsides, even with mixed infection. The mercury being taken merely induces local congestion and irritates the vessels, activating the spirilla already in the mouth, just as decayed teeth, deposits of tartar or the eruption of a wisdom tooth are liable to bring on Vincent's angina. it may exist in an unnoticed latent form until it flares up under the mercury. Any drugs which kill the spirilla cure the mercurial stomatitis, even when the mercury is continued. Arsenic and silver nitrate are the most effectual. The arsenic can be given internally or intravenously or by local application; associated with the mercury it cures the disturbance set up by the latter. This "conjugated method," as he calls it, giving neosalvarsan with the mercury, allows the full therapeutic effect of the mercury while warding off trouble in the mouth. For local treatment, silver nitrate is more effectual than arsenic, being the specific, he affirms, for external spirilla infections. The treatment which he has found promptly successful in hundreds of cases begins with mechanical cleansing of the mucosa of the patches and membranes. This is done with cotton-wound toothpicks dipped in 1 per cent. silver nitrate. The ulcerating mucosa is rubbed vigorously and cleansed of all the purulent masses and pseudomembranes, working between the teeth, and thus transforming the inflamed mucosa into a red, freely bleeding surface. The mucosa thus prepared is swabbed with a 1:15 or 1:20 solution of silver nitrate, working it into all crevices, and the procedure concludes with copious application of 1 per cent. methylene blue. The first treatment is always the longest and

the hardest to bear. By the next day the aspect of the lesions is much modified and the functional symptoms have improved. The swabbing is done once a day at first and then at longer intervals. It soon is possible to have the tartar removed and the teeth otherwise put in order, and with hygiene of the mouth, gargling with hydrogen dioxid and brushing the teeth, there is no return of the buccal infection, even although the mercurial treatment is continued unmodified. [Compare with the article by Campbell and Dyas in THE JOURNAL, June 2, 1917, p. 1596.]

35. **Castor Oil for Dressing Wounds.**—Revillet comments on the fact that castor oil never dries out, so that gauze, etc., impregnated with it never sticks to the wound, no matter how long it is in contact with it. Another advantage of castor over other oils is its characteristic slipperiness which facilitates the working in of wicks, etc., and renders their extraction easy and harmless. But its chief advantage is that it dissolves alcohol, tinctures, essences, etc., and holds them without allowing sedimentation. Perfume manufacturers use castor oil as an excipient for essences as it holds them without growing turbid or precipitating them. After considerable trials he found that 0.4 c.c. each of oil of thyme, oil of lavender and oil of eucalyptus in a liter of castor oil produced an agreeable aromatic lubricant and dressing which deodorizes at once and never irritates, while it has some antiseptic power. The dressings impregnated with this oil mixture are sterilized in a jar placed in boiling water for an hour and a half. Steam sterilization would drive off the volatile oils and might break the jars.

36. **War Diarrhea.**—Mollière declares that infectious sore throat, dental caries and gastro-enteritis might be warded off in many cases if chronic rhinopharyngitis were promptly cured. He examines the throat the first thing, when a man complains of enteritis, and swabs the throat with iodized glycerin several times a day. When there has been diarrhea for several days, typhoid or infection of the biliary passages should be suspected, even when there is no fever. A slow infection with exposure to wet and cold is liable to send the temperature below normal rather than above in some cases. With an infectious process in the biliary passages the pain appears and grows worse after walking a few miles, but it may not be severe. It is always on the right side and may be at the bladder point or McBurney point, but is diffuse on pressure except when it can be localized with the sign of Glénard's girdle. It is not accompanied by muscular rigidity of the abdominal wall, and it may be relieved by wearing a tight belt. The diet does not seem to modify it except that meat and alcohol aggravate it. Another sign is that saline purgatives do not act until after an interval twice or three times as long as usual, and, after their effect has passed off, the stools retain their diarrheic nature instead of the constipation which ordinarily follows a purge. The third sign is a tendency to jaundice in the conjunctiva after much fatigue or a heavy meal or a small dose of alcohol. A liqueur glass of brandy is rapidly followed by this subicterus.

Paris Médical

August 18, VII, No. 33, pp. 145-160

37 *Light and Heat as Aid to Massage. L. Alquier.—p. 145.
38 *Tests of Functional Capacity of Left Ventricle. L. A. Ambiard. —p. 149.
39 Technic for Removing Sequesters. (Esquillectomie en chirurgie de guerre.) H. Costantini.—p. 154.
40 *Recent Surgery and Medicine in Germany. A. Leroy.—p. 158.

37. **Treatment with Electric Light and Heat plus Massage.**—Alquier lauds the excellent results obtained with what he calls a thermophotophore which focuses the light and heat from an incandescent bulb on the region over persisting edema and relics of inflammation; its action is reenforced with massage. This combination ensures the reabsorption of everything that is resorbable by the blood or lymph passages as long as fibrous tissue is not definitely constituted. He has succeeded by this means in restoring the functional use to limbs apparently permanently crippled by cheloid cicatricial tissue or diffuse or localized induration or hard edema. He reports also the rapid improvement of lymphatic engorgement in muscular rheumatism, and in periarthritis and synovitis, even the tuberculous. He has also cured by this means cases of pseudoneuralgia and visceral trouble including palpitations of the heart with arrhythmia, dyspnea from inability to expand the chest, and certain laryngeal and gastro-intestinal troubles originating in engorgement with lymph.

38. **Test of Heart Functional Capacity.**—Amblard gives a number of charts registering the maximum and minimum blood pressure and the pulse, at rest, after moderate exercise, and after violent exercise. Some of the charts are made up from the average of large numbers of healthy persons, and others from persons with various heart affections. Whatever the pressure may be to start with, if the maximal pressure drops and the minimal rises only a very little after exertion, while the pulse becomes much accelerated, this indicates absolute insufficiency on the part of the heart unless the significance is modified by long training in physical exercise. He calls attention to this increased frequency of the ventricular wave as an aid in sifting out men whose hearts are not equal to the strain of exhausting exertion, although he admits that dyspnea on effort is the true warning signal of functional insufficiency of the ventricle.

40. **Surgery in Germany.**—Leroy reviews some recent articles on war surgery that have been published in the German medical weeklies, remarking: "The German medical majors make necropsies, and that is a superiority over other countries. They write that the war has taught a number of things, among them that when a man with a brain wound succumbs after resection of brain tissue, the ventricles are always found infected. It is this infection which is responsible for the hernia of the brain and decides the man's fate. Consequently, do not resect, but let the cerebrospinal fluid flow." He quotes in regard to wounds of the lung that they advise puncture always when there is effusion with fever even although not more than 100 c.c. of fluid can be withdrawn. In case of infection, they resect the eighth rib with drainage both front and rear. Necropsies have shown that extravasated blood above the liver passes into the pleura, and that with any lesion of the diaphragm the viscera hernia upward. The German surgeons confirm the extreme gravity of injuries of the large intestine and the mildness of uncomplicated perforations of the bladder. They advise to leave open to the air the profusely suppurating wounds, dressing them at night with an absorbent dressing of animal charcoal or pulverized sugar. As a substitute for hydrogen dioxid they use a mixture of equal parts of calcium perborate and talcum. They report six cases of gas gangrene cured under treatment with an elastic band drawn tight enough to make the limb red and hot but not enough to induce anesthesia or pain. For erysipelas they commend ultraviolet radiation, commencing with ten minutes a day and increasing daily by from one to five minutes, the distance from the quartz lamp from 70 to 100 cm. Treatment of injury from asphyxiating gases includes, during the period of agitation, injection of atropin, from 0.5 to 1 mg.; during the phase of collapse, caffein, avoiding strong doses.

Presse Médicale, Paris

August 9, XXV, No. 45, pp. 465-472

41 *Frequency and Significance of Left and Right Diastolic Aortic Murmurs with Aortic Insufficiency. F. Trémolières, L. Caussade and J. Toupet.—p. 465.
42 *Minor Electric Signs of Sciatica. V. Neri (Bologna).—p. 466.
43 *Pseudo-Tuberculous Fat Granulations on an Ovary. F. Jayle and Y. Bertrand.—p. 468.
44 Treatment of Ileus. V. Pauchet.—p. 468.

August 23, No. 47, pp. 481-496

45 *Vaccine Therapy for Typhoid Osteoperiostitis. P. E. Weil and Chevrier.—p. 481.
46 *Connection between Alopecia Areata and Defectively Developed Teeth. R. Sabouraud.—p. 484.
47 *Skin Plastic Operation after Opening Up Fistulous Lesion in Long Bone. (Ostectomie suivie de stomatoplastie.) F. Jayle.—p. 486.
48 *Rapid Evolution of General Paralysis in Men on Active Service. R. Mignot.—p. 487.
49 American Methods of Anesthesia. J. Luzoir.—p. 488.

41. **The Murmurs with Aortic Incompetency.**—Trémolières asserts that in young adults the murmur of aortic insufficiency is generally to be heard to the left of the sternum, in

the third interspace, instead of at the classic site as taught in the textbooks. Roentgenoscopy, always a valuable guide in cardiac pathology, will confirm the diagnosis of the aortic insufficiency in these cases. Only when the valvular trouble has reached an advanced stage and been aggravated by the dilatation of the right cavities, only then is the murmur heard at the classic site to the right of the sternum. This was the case only in ten of sixty-six cases studied; in twenty-six the murmur was heard to the left of the sternum; in twenty at the sternum itself; in nine at the xiphoid appendix, and in one case at the tip. When the murmur was heard at the left of the sternum it was usually at the inner angle of the third or second interspace; exceptionally at the fourth or still more rarely at the fifth. He explains the mechanism for this, and describes the roentgenoscopic findings. With a recent aortic lesion the left ventricle is simply hypertrophied and the aorta is vertical, and the murmur is heard to the left of the sternum. With an old aortic lesion the right cavities are dilated also and the aorta slants, and the murmur is heard to the right.

42. **Electric Reactions with Sciatica.**—Neri's article was summarized recently when it appeared elsewhere. (Abstract 70 in THE JOURNAL, p. 246.)

43. **Fat Granulations on the Ovary.**—Jayle and Bertrand give the macroscopic and microscopic findings in a case of ovarian abscess with small yellowish granulations scattered over the surface, closely resembling tuberculous processes. They proved, however, to be merely fat granulations.

45. **Vaccine Therapy of Typhoid Osteoperiostitis.**—Weil has now a record of twelve cases of ostitis consecutive to typhoid fever. Nine of the men had never been given preventive vaccination against typhoid but two had been thoroughly vaccinated, ten and three months before. Agglutination was pronounced in all although the interval since the typhoid had been one or two years or more. The ages ranged from 27 to 44, only two being under 30. In differentiating, exclusion of tuberculosis is practically the only difficulty. In some other cases typhoid fever had caused the flaring up of clinically cured tuberculosis, and the ostitis was the work of the latter. Differentiation in one case was facilitated by a concomitant anal fistula. A dental origin was discovered in other cases. In two cases the ostitis was in a rib and had caused much bulging and pain, but there was no suppuration. The bone process was of one and two years' standing but it subsided smoothly in each case under the typhoid vaccine therapy alone, and the cure has been complete during the six months to date. Vaccine therapy alone seldom cures in the suppurating cases, as the lesions are too deep and extensive for this unaided to be effectual. But complete success was attained by commencing the vaccine therapy and, after four injections, clearing out the bone lesion and then resuming the vaccine to a total of sixteen injections in all. He outlines the extensive operative measures necessary to clear out the focus, and expatiates on the highly satisfactory results obtained by this mixed treatment. The bone lesion once cleared out, healing proceeded remarkably fast and by the end of two or three months the cure seemed to be complete. The vaccine prevents reinfection of the bone, which is the rule after ordinary surgical treatment without the vaccine, and is frequent after vaccine therapy alone. By combining the two, the trouble is actually conquered. Better than this, however, he declares, is the prevention of the trouble, or at least its early and complete cure while still in the incipient stages. By detecting the bone affection early and attacking it at once with vaccine therapy, we can avoid the necessity for surgical measures.

46. **Connection between Falling of the Hair and Imperfect Teeth.**—Sabouraud gives some illustrations of the teeth of persons with alopecia areata. They indicate, he says, that some initial teratologic disturbance is responsible for the tendency for the hair to fall out, and for the defective teeth and defective growth of teeth and nails. Inherited syphilis is sometimes but not always responsible.

47. **"Cutinization" in Treatment of Fistula into Bone.**—Jayle gives an illustrated description of his method of treating fistulas into long bones rebellious to the ordinary methods. He transforms the bottle-shaped lesion into a broad open wound, and lines the walls of the cavity thus created with skin, after loosening up the skin for some distance all around the hole. To get skin enough to cover the entire circle of the opening he makes a scythe-shaped incision at each end of the opening, the straight line, representing the handle of the scythe, running parallel with the lengthwise axis of the opening. The flap thus mobilized is easily twisted around to cover the rest of the opening at each end after the skin has been sutured along each side. The curving needle is passed through the skin some distance back of the edge of the hole and is drawn out just below the periosteum where it is threaded with one end of the suture material which has been passed through the extreme edge of the skin to form a U. The two ends are thus drawn back through the skin separately and tied. Six of these threads are sufficient, each tied separately. The skin defect left by twisting the flaps around is easily corrected by drawing up the skin and suturing it. The finished operation shows an open crater directly in the bone, like a basin, with nothing but skin showing, lining all the sides down to the bone at the bottom. Jayle has done 536 operations for bone fistulas during the war.

48. **Galloping General Paralysis in the Army.**—Mignot has been impressed with the rapid development of general paralysis when it once makes its appearance in the men on active service. It runs its course in months instead of years as usual. Before the war, out of 100 cases in his service, only eight ran their course in less than a year, while among the 145 soldiers since 1914, fifty of the patients have died. The privates are sent elsewhere but the officers are kept to the end in his service. Of eleven officers with general paralysis coming on during their active service at the front, four died within six months of the onset, and three in less than twelve months. Out of seventeen officers with general paralysis there has been nothing approaching the usual remissions of the disease except in one instance.

Progrès Médical, Paris

August 18, XXXII, No. 33, pp. 273-278

50 Colloidal Sulphur in Rheumatismal Affections of the Eyes. A. Bichon.—p. 273.
51 The Luetin Test for Syphilis. A. Tzanck and A. Bernard.—p. 274.
52 The Standards for Physical Effort. B. du Coteau.—p. 276.

Revue Médicale de la Suisse Romande, Geneva

July, XXXVII, No. 7, pp. 382-472

53 Comparative Study of Preparations of Digitalis. F. Heim.—p. 385.
54 Impressions on a Visit to the Neurologic Center at Lyons. R. Guillermin.—p. 429.
55 *The Mineral Metabolism with Exophthalmic Goiter. R. H. Kummer.—p. 439.
56 Congenital Atrophy of One Half of the Diaphragm. N. Betchov.—p. 455.
57 *Captivitosis. C. Julliard.—p. 464.

55. **The Metabolism of Minerals with Exophthalmic Goiter.**—Kummer devotes several pages to the metabolic findings in a man of 42 with exophthalmic goiter for two years, incapacitating him notwithstanding energetic treatment and with repose. Thyroid treatment aggravated all the symptoms, but resection of part of the thyroid cured him and restored full earning capacity. The metabolism of minerals showed the same tendency as the other vital processes, namely exaggeration and instability. In the course of the research, subcutaneous injection of calcium iodid on one occasion caused effects that impelled Kocher to add a note to Kummer's report calling attention to the action of calcium iodid in this case. He suggested a trial of it on account of its efficacy in acute tetany. "If Kummer's results are confirmed by others," Kocher wrote, "they suggest an explanation for certain correlations between the parathyroids, the exophthalmic goiter and the functions of the thyroid. Removal of the thyroid seems to attenuate the symptoms of tetany. This was particularly striking in a case of semithyroidectomy for exophthalmic goiter complicated with chronic tetany. Thyroidectomy with exophthalmic goiter acts to increase the retention of nitrogen, of carbohydrates and of fats, as our operation and experiences have established. The thyroidectomy

consequently would reduce the disassimilation of nucleins, and also would reduce the exaggerated excretion of phosphorus and calcium which Kummer's research has established. This explains the curative action of thyroidectomy in tetany, a disease which, according to McCallum, is due mainly to loss of calcium. If further experiences confirm Kummer's results, and injection of calcium iodid actually does induce in exophthalmic goiter retention of phosphorus and calcium up to positive balance, we can then understand the favorable action of calcium iodid on the symptoms of tetany." [This must have been one of the last communications from Kocher's pen. It is dated April 4, and his death followed in August.]

57. **Captivitosis.**—Julliard has coined this term to express the condition of prisoners of war suffering from symptoms resembling those of a traumatic neurosis. Their obsession to be allowed to return home from their captivity maintains the morbid condition. This obsession is to the mind what a foreign body is to the tissues. The only cure, he thinks, is to make the man realize, once for all, that he has no chance for being sent home, but must live the life of the other captives and not be pampered in the hospitals as a sick man.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 25, XLVII, No. 34, pp. 1089-1120

58 Technic for Transfusion of Blood. R. Klinger and E. Stierlin.—p. 1089.
59 *The Neurosis Problem in the Light of War Neurology. K. Imboden.—p. 1098.

59. **The Neurosis Problem by the Light of War Neurology.**—Imboden reviews the extensive literature on functional neuroses of the last three years, emphasizing that there is no essential psychologic difference between the neuroses among the soldiers and the neuroses of peace times. Human life is a struggle for existence even without the thunder of artillery and starvation blockades, and many get wounded and live on, crippled, or sink by the wayside. He remarks that the fact that so few men develop neuroses among the millions engaged in this awful warfare shows that civilization does not develop weaklings to the extent that had been feared. He regards it as significant that the professor of psychiatry at the University of Jena has recently published a manual on psychanalysis, saying that psychotherapeutic demands are now made on every physician during these years of war, and the psychanalysis movement should have general attention. Imboden declares that the one fact emerging from the war neurology data to date is the increasing appreciation of the psychic factor in the genesis of the clinical pictures of the nervous state. Nonne even advocates hypnosis in treatment, and the array of disguised persuasion methods proposed is legion: Goldstein advocates a sham injection under a few whiffs of ethyl chlorid; Weichardt the continuous bath until all the symptoms subside; Podmanizky lumbar puncture to cure abasia. The "extremely logical and extremely brutal" method introduced by Kaufmann, consisting in strong electric shocks with loud, staccato military commands to do certain exercises, has realized some surprising cures, but time has shown that relapses are liable to follow on the slightest provocation.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 2, XXXVIII, No. 61, pp. 849-856

60 Five-Day Fever. (Febbre quintana o volinica.) G. A. Pari.—p. 849.

August 5, No. 62, pp. 857-872

61 Two Cases of Mesoaortitis with Aortic Insufficiency of Syphilitic Origin. G. Binetti.—p. 859.
62 Physicians and Pharmacists in Wartime. E. Villa.—p. 871.

August 9, No. 63, pp. 873-880

63 Sternopagus Double Monster. C. Fino.—p. 875.

Riforma Medica, Naples

August 25, XXXIII, No. 34, pp. 829-848

64 Economy in Food. L. Ferrannini.—p. 829.
65 Retrograde Gangrene of the Intestine. B. Quarella.—p. 830.
66 Enlargement of Ear Suggesting Elephantiasis. C. Vignolo-Lutati.—p. 838.
67 Remarkable Progress Shown in Mobilization of the Profession in America. Editorial.—p. 846.

Brazil Medico, Rio de Janeiro

August 4, XXXI, No. 31, pp. 261-268

68 The Tuberculosis Problem at Rio de Janeiro. P. Barbosa.—p. 261. Continuation.
69 *Pituitary Extract in Treatment of Abnormal Intestine Functioning. (Acção enterocinetica da pituitrina.) A. P. Pimentel.—p. 263.

69. **Pituitary Extract to Regulate the Intestines.**—Pimentel reports ten cases which seem to demonstrate that it is possible to regulate bowel functioning with pituitary extract even in cases of habitual constipation or exaggerated peristalsis, as with dysenteriform enteritis in infants. He states that pituitary extract is harmless while its action on the bowel is prompt and pronounced. His patients were adults from 25 to 72 years old and, with one exception, none displayed any by-effects. The exception was a man of 42 who did not have constipation but took the extract as an experiment. Six minutes after the injection the bowels moved, for the second time that day, and peripheral vasoconstriction was noted, while the pulse dropped from 84 to 70. The dose was 1 c.c. of a pituitary extract administered by the usual technic. Some required three injections at a week's interval before bowel function was restored to normal. The treatment failed in one case, a woman of 72 whose bowels for fifty-four years had moved only after rectal injections. No effect was apparent from three subcutaneous injections of the extract on successive days.

Revista de la Medicina y Cirugia de la Habana

August 25, XXII, No. 16, pp. 423-448

70 *The Venereal Diseases Question. V. P. Castello and L. F. Hirzel—p. 423.
71 Return of Menstruation for Five Months to Date in Negro Woman of Ninety-Two. L. F. de Jongh.—p. 429.

70. **Venereal Diseases in Cuba.**—Castello and Hirzel comment on what has been published recently in THE JOURNAL on the measures taken in different countries to repress the spread of venereal diseases. They state that Cuba and Havana in particular are far behind in this respect. They sent one of their charity patients in turn to all the dispensaries and laboratories in town without her being able to get a Wassermann test made anywhere. Many times they have seen indigent syphilitics who had secured a dose of salvarsan but could not find any one who would inject it for them. They add that not sufficient provision for instruction in the care of venereal diseases is made in the cirriculum there. They do not approve of the idea of compulsory notification, but plead for improved facilities for teaching the diagnosis and treatment of venereal diseases, prohibition of quacks' advertisements in periodicals and the founding of dispensaries for diagnosing and treating these diseases. They state further, "The advertising of patent medicines in Cuba has become a question of fashion; 50 per cent. of all the advertisements in the periodicals are of medicines and drugs, and these exploiters of medicine have taken possession of the field of venereal diseases as their own special property. They carry their impudence so far as to advertise that this or that preparation is better and superior in its effects to salvarsan, or that this or that injection will radically cure gonorrhea. Our sanitary authorities that are entrusted with the task of watching over the public health, and the Colegio Medico, entrusted with the task of watching over the prestige of the profession, should put an end to this iniquitous exploitation. . . ." "The number of syphilitics in Cuba is enormous and is increasing every day." In one dispensary for skin diseases maintained without financial aid by one of the writers, in connection with the Hospital Mercedes, 150 of the 563 applicants since last February, or 26.64 per cent., were syphilitics.

Sigio Medico, Madrid

August 11, LXIV, No. 3322, pp. 585-604

72 Acute Malarial Ataxia. E. F. Sanz.—p. 586.
73 *Dosage for Children. C. S. de los Terreros.—p. 588.
74 Enucleation of Erythroblasts. F. Mas y Magro.—p. 592. Commenced in No. 3321, p. 566.

73. **Dosage for Children.**—De los Terreros declares that the doses for children should be based on practical experience and not on theory. The pediatrists of the longest experience are often the ones who pay least attention to the dosage

given in the textbooks, and he urges a revision of this branch of therapeutics. He is convinced that children can stand much larger amounts than those theoretically computed for them with certain drugs, and the lack of benefit from our medication is often due to the inadequacy of the dosage. He discusses in particular opium preparations, calomel, digitalis and arsenic. With arsenic in particular, small repeated doses actually confer a kind of immunity as the tissues become accustomed to the drug. He gives it usually in the form of sodium cacodylate, in the minimal dose of 0.10 gm. per day, to begin with, after a small test injection,

Hospitalstidende, Copenhagen

August 8, LX, No. 32, pp. 765-788

75 *Light Dermatitis. H. Haxthausen.—p. 765.
76 Magnesium Sulphate in Treatment of a Case of Puerperal Eclampsia. J. Kaas.—p. 776.

75. **Light Dermatitis.**—Haxthausen has been conducting research on the importance of certain substances, occurring normally in the body, for the biologic reactions to light. The work was done at the Finsen Light Institute at Copenhagen. It was found that the disintegration of the red corpuscles under the influence of chemically active light rays seems to be a process closely akin to the action of light on the skin. Certain substances in the body promote and others check this process. Albuminous substances and other colloids inhibit it, while oxygen, urea and certain elements of the bile and also hematoporphyrin promote it. The balance between these substances determines the degree of reaction to the light. There may be a preponderance of the inhibiting or of the accelerating substances normally in the body, and there may be additional factors in the form of foreign elements, or all the above factors may be combined.

Hygiea, Stockholm

July 16, LXXIX, No. 13, pp. 625-688

77 *Immediate and Remote Results of Laparotomy for Myoma. L. Lindquist.—p. 625.

77. **Laparotomies for Uterine Myomas.**—Lindquist reports one death from pulmonary embolism among sixty-five women after removal of the myomatous uterus, and one after supravaginal removal of the uterus in 121 cases. There was no fatality in his thirty-five conservative operations for uterine myomas. Forty-one pages are devoted to tabulation under twelve headings of the total 221 cases, with the immediate and ultimate outcome, the series covering eighteen years. Nearly all of the cases were encountered in private practice. Besides these 221 laparotomy cases, he had forty-two vaginal and 152 medical cases, fifteen given roentgen treatment and twenty treated with cureting. In five cases the laparotomy was done on a pregnant woman and in most of them the pregnancy continued undisturbed. The mother and two sisters of one patient in this group had required operative treatment for myomas at some time. Climacteric disturbances from the artificially induced menopause followed in 45 per cent. of the cases, but only in 41.6 per cent. of the ninety-one cases in which one ovary was left; where both ovaries had been removed, in 51.6 per cent. Classifying the cases further by the previous condition of the ovaries and tubes, climacteric disturbances were noted in 59 per cent. of the twenty-two with previously pathologic ovaries and only in 36 per cent. of those with sound ovaries. Omitting those with merely slight climacteric disturbances, the ultimate outcome was excellent in 94.2 per cent. of the hysterectomy cases and in 81.1 per cent. of the supravaginal amputations. Evidences of malignant degeneration were found in fourteen cases; seven of the sarcoma patients are still living. The interval in one case since has been over seven years and in two over three; one died from heart trouble after four years.

Norsk Magazin for Lægevidenskaben, Christiania

August, LXXVIII, No. 8, pp. 889-1016

78 *Pulmonary Tuberculosis in Norwegian Province. (Om lungetæringen i Finmarken.) A. Holst.—p. 889.
79 *Disease of Optic Nerve Originating in the Nose. A. Galtung.—p. 921.
80 Factors in Epidemicity. (Hvorledes man finder Genius epidemicus.) A. Magelssen.—p. 939.
81 Classification of Mental Diseases Now and in the Past. H. A. T. Dedichen.—p. 948.
82 *Sarcoma Inducing Ascending Paralysis. L. Sommerfelt.—p. 968.

78. **History of Pulmonary Tuberculosis in Norwegian Province.**—Holst analyzes and comments on the mortality from pulmonary tuberculosis in Finmarken. It has jumped from 0.56 per thousand living in 1875-1879 to 2.44 in 1910-1913. The corresponding rate for the whole country was 1.22 and 1.73. The type of the disease in Finmarken seems to be of a more rapid course than elsewhere. He is inclined to ascribe this and the prevalence of the disease to the improved traffic facilities and the fact that it is a comparatively virgin soil for tuberculosis. Holst remarks in conclusion that although the tuberculosis mortality throughout the country is comparatively low, yet the number of cases of pleurisy, which is almost inevitably of tuberculous origin, seems to be on the increase. He queries whether other remote provinces, virgin soil for tuberculosis, may not be facing a similar rise in the tuberculosis mortality as means of intercommunication are extended and traffic facilities improve.

79. **Optic Nerve Trouble Originating in the Nose.**—Galtung relates that it is exactly 100 years since Beer in 1817 first called attention to the close connection between disease in the nose and in the eyes. Galtung discusses this field and the literature on it, especially affections originating in the nasal accessory cavities and involving the optic nerve but without causing an abscess in the orbit. Even when there is manifest disease in an accessory sinus, it is necessary to exclude alcohol and tobacco poisoning, multiple sclerosis and syphilis, before incriminating the sinusitis in the etiology of the optic trouble. In a recent case a man of 30 had multiple sclerosis and ethmoiditis and also retrobulbar neuritis. As the latter persisted after the cure of the ethmoid disease, he ascribes it to the multiple sclerosis. Another patient, a man of 45, had disease in both the ethmoidal and sphenoidal sinuses, and this was evidently responsible for the optic nerve trouble. It was in an advanced stage, vision being considerably reduced. There was also peripapillary and paracentral scotoma. The van der Hoeve symptom was positive, and the operation on the cavities showed that the posterior recesses had been invaded. As soon as the accessory cavities were cleared out on one side, the scotoma on that side subsided, but on the other side it persisted unmodified until this side had been operated on also. The scotoma then subsided entirely and vision improved.

82. **Sarcoma in Spinal Ganglion.**—Sommerfelt has not been able to find in the accessible literature a case like the one of which he gives an illustrated description. The patient was a man of 28 and the symptoms indicated ascending paralysis. Necropsy revealed a sarcoma at the twenty-fourth left spinal ganglion, about 35 mm. long by 20 wide. It had a fibrous capsule and was connected with nerve roots, but it lay entirely outside of the spinal canal. There are twenty-one cases on record of tumors in the gasserian ganglion, including three sarcomas and four endotheliomas. Anatomically they resemble this case, but clinically differ completely from it as the symptoms are only those of a brain tumor plus symptoms on the part of the trigeminal nerve.

Ugeskrift for Læger, Copenhagen

August 2, LXXIX, No. 31, pp. 1287-1328

83 *Lipemia in Rabbits during Anemia from Hemorrhage. V. Ellermann and E. Meulengracht.—p. 1287.
84 Abbott's Method of Treating Scoliosis. E. Nyrop.—p. 1297.

83. **Lipemia in Rabbits.**—Ellermann and Meulengracht report considerable research on lipemia induced in rabbits during anemia from losses of blood. Their tables and other data confirm Milne's assertion (1913) that extremely pronounced lipemia develops in rabbits after severe hemorrhages but not under the influence of toxins. The cholesterol content of the blood increases along with the fat content. The fat seems to be derived from fat deposits in the body. For its passage into the blood, the loss of the blood serum—with loss of its fat-splitting ferments—is probably responsible.